

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:—

| | |
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| 1925 | |
| Mar. 23 | Entries close for Schneider Cup Race. |
| Mar. 23 | Entries Close for Gordon Bennett Balloon Race. |
| Mar. 25 | Royal Aero Club Annual General Meeting. |
| Mar. 26 | Dr. Eckener (Managing Director, Zeppelin Airship Co.): "Modern Zeppelin Airships," before R.Ae.S. (Society of Arts). |
| Mar. 30 | Royal Aeronautical Soc. Annual General Meeting. |
| Apr. 23 | Colonel F. Searle: "The Maintenance of Commercial Aircraft," before R.Ae.S. |
| Apr. 24 | Commander C. D. Burney, C.M.G., M.P., R.N.: "The Position of the Airship in Aerial Transport," before I.Ae.E. |
| Apr. 30 | Wilbur Wright Lecture, Rear-Admiral D. W. Taylor: "Some Aspects of the Comparison of Model and Full-Scale Tests," before R.Ae.S. |
| May 8 | Capt. W. H. Sayers, Hons. Member: "A Resume of Achievements in Aviation during the Past Year," before I.Ae.E. |
| May 7 | Aero Golfing Soc. Spring Meeting, Worplesdon. |
| May 20 | Visit to the National Physical Laboratory, Teddington, by I.Ae.E. |

EDITORIAL COMMENT.



It is probably safe to say that among the great flights of recent years that of Gen. Sir Sefton Brancker, Mr. Cobham and Mr. Elliott from London to Burma and back will be conspicuous for its very great practical and commercial value. There have been flights more spectacular, flights covering greater distances, non-stop flights full of adventure and narrow escapes; but we venture to say that, highly meritorious as those flights were, the London-Rangoon-London flight of the D.H.50 has been of greater commercial utility. And the very fact that the flight was without incident is, although perhaps it has not been quite realised, a token of its greatness. It is, therefore, with more than ordinary satisfaction that we present to our readers this week Mr. Cobham's own story of the flight, illustrated by photographs taken by Mr. Elliott during the journey. It goes without saying that we have not been able to reproduce more than a very small selection of the pictures taken on the flight, but, even so, we think the relatively small number reproduced will serve to give a very good idea of the sort of views which the air traveller of the future will see on his journey to the East. And we think it will be admitted that, from the evidence of the photographs and from Sir Sefton's statements, there can be little doubt that future air travel will be not only the most pleasant of all forms of travel, but will also prove the most interesting, giving, as it will, the voyagers an opportunity of seeing the countries traversed from an entirely novel point of view.

Cobham's "story" requires little comment, except, perhaps, to point out that he is, we think, inclined to belittle his own efforts. That a pilot who can, with unerring accuracy, find his way to remote places in spite of all sorts of obstacles, not once but time after time, must be taken as proof of quite exceptional ability as a navigator, apart altogether from the question of ordinary piloting. Those acquainted with our yachtsmen will know how frequently one hears the proud navigator who has made a passage exclaim concerning his "landfall": "Right on the end of

the bowsprit, sir." It would seem that Cobham could, on very many occasions, have, with as much justifiable pride, called attention to his landfalls, but he takes them so much for granted that he never refers to them.

Sir Sefton Brancker, although at the banquet he referred to himself as the "sleeping partner" of the expedition, has really done much more than he himself appears to realise or claims by being the passenger in such a flight. As in other things, the personal example is worth volumes of counsel, and the manner in which Sir Sefton has proved his willingness, or even eagerness, to fly upon every opportunity has done a tremendous amount of good. The Duke of Sutherland at the banquet referred to Sir Sefton as "The best commercial traveller the aircraft trade has ever had." He is all that, and a good deal more.

Like Mr. Cobham, his engineer, Mr. Elliott, was inclined to belittle the effort, and wanted to place all the credit with the machine and engine. While it goes without saying that an unsuitable machine and an unreliable engine would effectively have prevented the flight being so successfully accomplished, there can be no doubt that the careful grooming by Mr. Elliott must have had a good deal to do with the absence of trouble of any kind, and he also must, therefore, be considered to have contributed a very large share towards the success of the tour.

Perhaps one of the really significant and valuable features of the organisation of the flight was the manner in which the "trade"—in other words, the aircraft industry—helped wholeheartedly and without a trace of jealousy. A very "Scotch" Treasury failed to see any obligation to finance the undertaking, and so it devolved, in the main, upon the industry to see that the necessary finances were forthcoming. A few firms directly interested paid more than their share, and of the rest, not a single one refused its assistance. Surely there is here a splendid example of what an industry can do if of a single mind. We very much doubt whether anything similar could have been arranged by any other nation, and we take it as a good omen of future progress. In this connection it should not be omitted to refer to the action of Mr. C. R. Fairey, chairman of the S.B.A.C. at the commencement of the flight, in guaranteeing the necessary funds until individual members of the society could be approached. Such resolute action goes a very long way towards solving difficulties, and British aviation in general is indebted to Mr. Fairey for the sportsmanship he has shown.

With regard to the equipment used by the expedi-

tion little need be said. The D.H.50 is a type of small commercial aeroplane that has been in use since 1923, when the first specimen made its fine flight to Gothenburg, where it won first prize in the I.L.U.G. competitions. Since then the type has been used extensively at home and in the colonies, notably in Australia, and has established an enviable reputation for good flying qualities and comfort for the passengers, as well as being a good commercial proposition as regards economy. Mr. Sopwith, in his speech at the banquet, stressed the fact, and quite rightly so, that the machine used in the flight was a perfectly standard one. This is a very important point, as it can truly be said that the machine was in no way specially designed and built for the flight, but was, on the contrary, built as a general utility machine. The only alteration made, which does not in the slightest change the machine, was the fitting of larger tanks than the standard in order to enable the machine to cover certain stretches of the route without landing. A similar alteration could, and doubtless would, be made if the machine were wanted by any operating company for special purposes.

The Siddeley "Puma" engine is, of course, a comparative "old-timer," and is no longer being manufactured in quantities, although the Aircraft Disposal Company holds large stocks of it. Its reliability has been proved over and over again, more especially in the de Havilland machines, and the way in which the engine fitted in the Burma flight machine stood up to its work only confirms that reputation. In view of the undoubted reliability of the "Puma," and the interest taken at present in three-engined machines, would it not, we wonder, be worth while designing a commercial aeroplane to be fitted with three "Pumas"? A total engine-power of about 700 b.h.p. should be a useful size, and such a machine should carry, say, 12 passengers over fairly short routes, and 10 or so over slightly longer ones. The engine is of "clean" lines and can easily be well streamlined, so that efficient aerodynamic design should be possible. The new Junkers three-engined machine shown in a photograph in this issue gives a lead as to what can be done.

To the rest of the equipment there is no need to refer here, as most of it is dealt with in a short article following Cobham's account of the flight. Suffice it to say that every item of the "trifles" did its duty and contributed its share towards the success. We think it will be admitted that congratulations are due to all concerned, and we express the hope that this flight may prove the first of many that shall carry the fame of British aviation to the farthest corners of the world.



At the Levée

At the Levée held on March 19 at St. James's Palace by H.R.H. the Prince of Wales, on behalf of H.M. the King, were the following:—Air Marshal Sir John Salmond, Principal Aid Aide-de-Camp; Group-Capt. C. Kilner; Wing-Commander Louis Greig; Capitaine de F. Sablé; Air Commodore T. J. Webb-Bowen; Sqdn.-Ldr. R. C. Lane. The following were amongst those presented to the Prince of Wales: Flying Officer W. Akerman; Wing-Commander C. Breese, A.F.C.; Capt. H. Deacon, D.F.C., R.A.; Flying Officer B. de Nevers; Flight-Lieut. A. Ellwood, D.S.C.; Sqdn.-Ldr. C. Hayward; Sqdn.-Ldr. D. Iron, O.B.E.; Pilot Officer A. McDowall; Flying Officer L. Nixon; Flight-Lieut. W. Poole, A.F.C., M.M.; Flying Officer R. Ragg; Flying Officer J. Silvester; Air Vice-Marshal J. Steel, C.B., C.M.G., C.B.E.; Sqdn.-Ldr. H. Stewart; Flying Officer J. Wingate; Wing-Commander A. Winter, O.B.E., etc.

Carlisle-Belfast Air Service

An inaugural flight in connection with the air mail service between Carlisle and Ulster took place on March 18. On the arrival of the London mail train at Stranraer, a dummy load of mail and newspapers was conveyed by car to Freugh aerodrome, and transferred to the waiting aeroplane. This left Freugh at 6.18 a.m., and arrived at Belfast at 7.5 a.m. The President of the Derry Chamber of Commerce stated that the Northern Government attached much importance to this service (which is being operated by Northern Air Lines), and had given £1,000. The Belfast Corporation had given £1,700. Arrangements had been made with the Post Office, both in Derry and Belfast. He suggested that if they applied for a few shares it would show that the people of Derry were taking an interest in the matter. Two machines will be used on this new service.

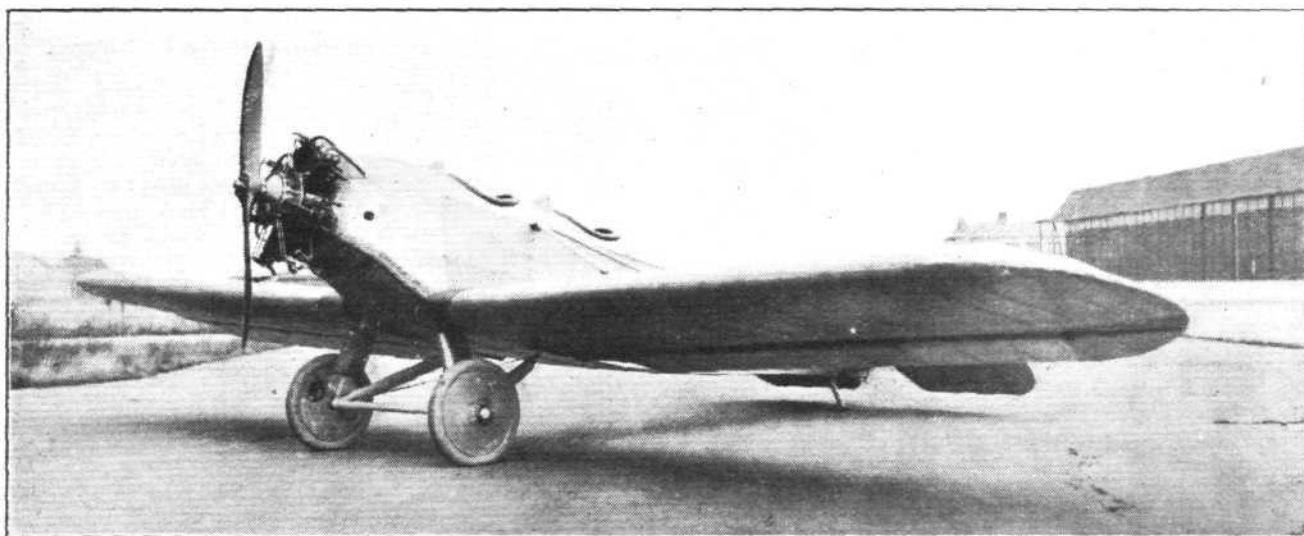
THE HEINKEL H.E. 18 SPORTS MONOPLANE

A New German Low-Power Two-Seater

IN view of the recent production in this country of a two-seater machine fitted with an engine of 60-70 h.p., and intended for school and sporting flying, *i.e.* the De Havilland "Moth" with "Cirrus" engine, described and illustrated in *FLIGHT* of March 5, it is of interest to know what other nations are doing in the matter of machines of approximately this power, and we are, therefore, pleased to be able to place before our readers this week details and illustrations of the new German machine which forms the subject of the following article. Owing to the limitations placed upon the size and power of German aircraft by the Versailles Treaty, German designers have for the last few years been turning their attention to machines of a power permitted by the Allies, and have in consequence obtained considerable

designer to the Caspar works, but now established with his own firm, and constructed by that firm, the Heinkel Flugzeugwerke at Warnemünde. The machine is the outcome of the Heinkel H.E.3 of 1923, which did so well at Gothenburg, and is very similar to its prototype except in certain minor alterations, made in order to cheapen the machine in quantity production.

Fundamentally the Heinkel H.E.18 is a low-wing monoplane with vee bracing struts as on the De Havilland D.H.53. One objection that has been raised against this type, and the only really serious one we have ever heard put forward, is the possible danger to the crew in case of the machine turning over on the ground. In the Heinkel two-seater provision is made against this by fitting a detachable steel



THE HEINKEL H.E. 18 : Three-quarter front view. The engine is a 75 h.p. Siemens radial.

experience with machines of relatively low power. But for the absence of suitable German small engines it seems likely that more would have been accomplished with really low-power machines, of the type known in this country as light planes. As it is, most of the German light planes have been fitted with British motor-cycle engines. In the low-power or "not-quite-so-light" plane class, however, the Germans designers have had available for several years engines of suitable type, and most of the German machines are, therefore, fitted with German engines, among which the two types of Siemens radial engines appear to have become most popular.

The Heinkel H.E.18 shown in the accompanying illustrations was designed by Herr Ernst Heinkel, at one time chief

tube guard running from the engine plate to the rear of the aft cockpit. In the photographs this guard is not shown in place, but it is stated that it can be fitted very quickly.

The fuselage is made in two distinct types, according to the requirements of the customer. The standard type, which is the one shown in the photographs, is of steel tube construction and covered with fabric. If, however, the machine is to be used under conditions or in localities where repairs to a steel tubular structure cannot easily be effected, an all-wood fuselage, with ply-wood covering, can be supplied instead.

This question of steel tube construction is one that might, we think, with advantage be taken up again now in this country in connection with low-power aeroplanes. The



THE HEINKEL H.E. 18 : Three-quarter rear view from above. This photograph gives an excellent idea of the lines of the machine.

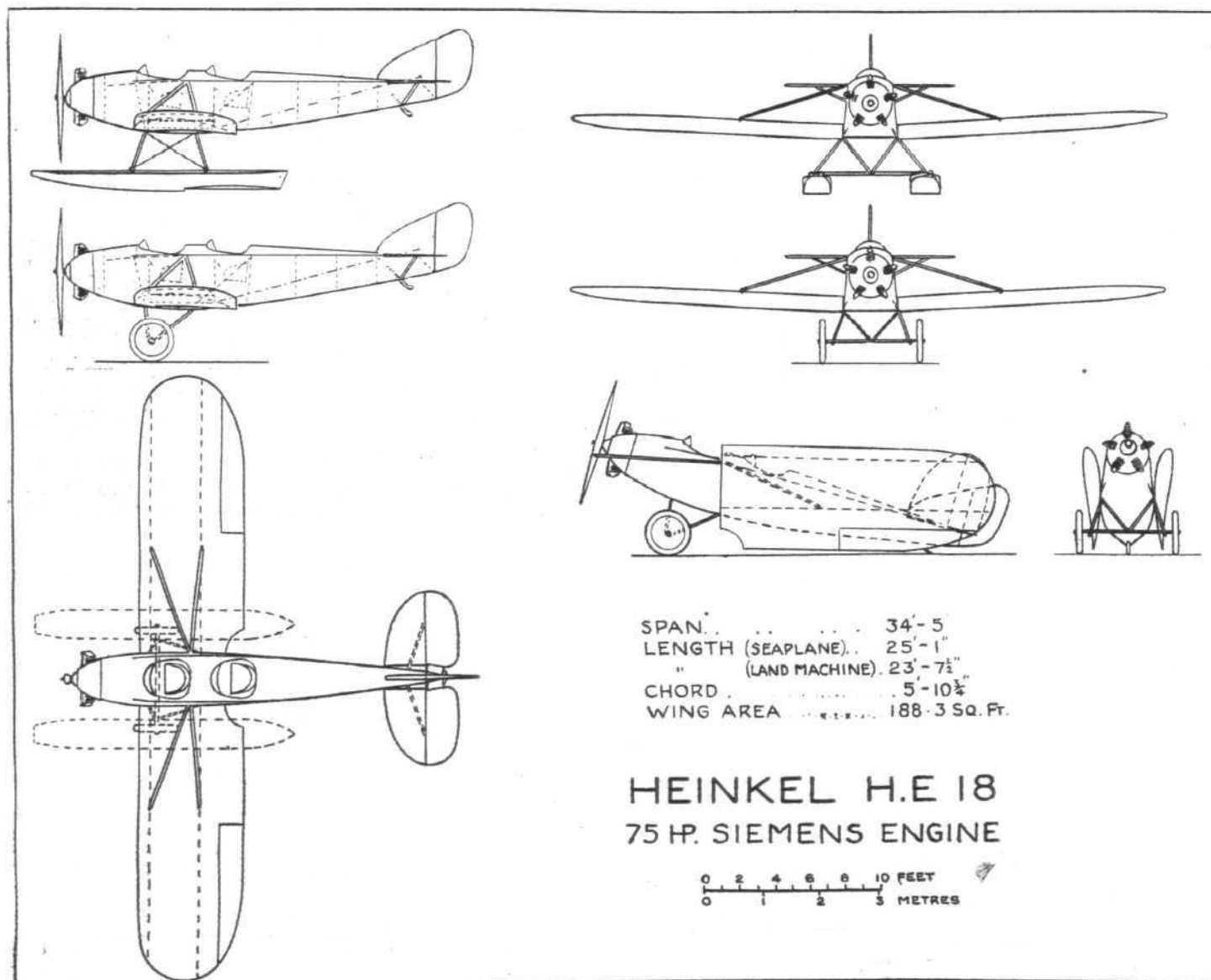


THE H.E. 18 AS A SEAPLANE : The long floats do away with the necessity for a tail float.

Fokker form of welded steel tube construction of fuselages is probably the cheapest ever devised, and one very great advantage of it is its adaptability. The change from one shape or size of fuselage to another can be very easily and simply made, and thus the risk of premature standardisation does not arise. Theoretically, it is true, the welded form of construction is open to criticism, but practical experience with the Fokker machines seems to show that the fears of the theorists are not well founded. We do not suggest a

slavish copying of Fokker's methods, and would avoid the use of welded joints in tension, but much of the method does appear to be very useful, and it would be interesting to have a ruling from the Air Ministry as regards the application to light 'planes.

However, to return to the "H.E.18," the two cockpits are arranged in the usual way, the pilot or instructor, as the case may be, occupying the rear cockpit and the passenger or pupil the forward one. Dual controls of the usual "stick"



THE HEINKEL H.E. 18 WITH 75 H.P. SIEMENS RADIAL AIR-COOLED ENGINE : General arrangement drawings, showing the machine as an aeroplane and as a seaplane, and also with wings folded.

type are provided, but that of the pupil can be removed, without the use of tools, in a few moments.

The engine, which is, in the type illustrated, a 7-cylinder radial air-cooled Siemens rated at 70-80 h.p., but which may be a Siemens 5-cylinder radial of 50 h.p., or any other type desired, is mounted on a swivelling engine plate, which allows of inspecting the back of the engine, with carburettor, magneto, etc., without disconnecting any leads. Aft of the engine is a fireproof bulkhead, and the petrol tank is mounted in the deck fairing aft of this bulkhead, where sufficient head is provided to give direct gravity feed.

The monoplane wings are of normal construction, with spruce spars and ribs, and are chiefly remarkable for the arrangement made for folding. The ailerons run the whole length of the wings, and are stated to give very effective lateral control. By means of a special arrangement the ailerons are also used as variable camber flaps for slow landing, the camber variation being effected by means of a lever in the pilot's cockpit, and the aileron action being retained.

Reference has been made to the wing folding arrangement, which is designed to enable the owner-pilot himself to fold the wings without assistance. The operation consists in folding the two halves of the monoplane wing against the sides of the fuselage, the space in the folded position being further reduced by folding the tail plane against the fin and rudder. The wing-bracing struts are not detached from the fuselage, and in fact the rear strut is not disturbed at all.



Air Aide-de-Camp to the King

The Air Ministry announce the appointment of Group Capt. Lionel Wilmot Brabazon Rees, V.C., O.B.E., M.C., A.F.C., as Air Aide-de-Camp to the King. This appointment is additional to that of Group Capt. C. F. Kilner, D.S.O., recently made.

Air Raid Reparations Claims

The Civilian War Claimants' Association has circulated to all Members of Parliament a statement of the case of air raid claimants for compensation for their treatment, coupled with a demand that action shall be taken to remedy their grievances. They ask that Parliament shall agree in principle that all damage done to the civilian population of Great Britain by land, sea, or air shall be a first charge on reparations.

That payment shall be made by the Treasury as and when sufficient money shall have been received on reparation account to pay instalments of not less than 10 per cent.

That in respect of damage to both property and person the amount of the claim shall be the amount already assessed and agreed by Government Departments, and used in setting out the claim of the British Government for reparations as put before the Reparations Commission on February 12, 1921, amounting to £7,936,456 for damage to property, and £36,030,360 for damage to persons, which amounts the Allied Governments have required and Germany has undertaken to pay in full.

That, in view of the past treatment of air raid sufferers,



The front strut is cast off at the front spar attachment and swung forward against the side of the fuselage, where it is held in position by a clip. The quick-release attachment of the front spar to the fuselage is next released, the wing is swung into a vertical position, leading edge uppermost, and folded along the sides. Doing one side at a time, the pilot can easily fold the wings himself without outside assistance, and the machine can then be stowed in a very small space, or trailed after a motor-car or motor-bicycle.

The undercarriage shown in our photographs is of the simple V-type, but in the general arrangement drawings a different form is illustrated, probably with a view to indicate the easy transformation of the machine into a seaplane of the twin-float type. The photograph showing the "H.E.18" as a seaplane indicates a balanced elevator, so that apparently slightly larger tail surfaces are fitted when the machine is used as a seaplane.

The main dimensions of the Heinkel "H.E.18" are: Length, o.a., 7.20 m. (23 ft. 7 ins.); span, 11.10 m. (36 ft. 5 ins.) total wing area, including ailerons, 188 sq. ft. Weight of machine empty 380 kgs. (836 lb.); useful load, 220 kgs. (484 lbs.); total loaded weight, 600 kgs. (1,320 lbs.) Maximum speed, 150 km./h. (93.7 m.p.h.); cruising speed, 140 km./h. (87 m.p.h.). Climb to 1,000 m. in 6 minutes. No figures are available relating to the landing speed, but in view of the relatively high wing loading this is probably fairly high.

and of the claim for payment of interest at 5 per cent. on reparations claims by the French Government, interest shall be added to the agreed claims at the rate of 5 per cent. per annum, until settled, as enemy debts.

That in the event of the House of Commons referring this matter to a Committee of the House, such Committee be set up *ad hoc*, and be required to report to the House in three months' time.

Brussels-Congo Flight

Lieut. Thieffry, who is flying in a three-engined Handley Page biplane ("Princesse Marie José") from Brussels to Belgian Congo, resumed his flight from Fort Archambault on March 14, and reached Bangui, where the machine will be overhauled before entering on the last stage of the journey over some 600 miles of dense forests.

Dakar-Paris Flight Ended

Cpts. Lemaître and Arrachard, who after their plucky attempt to fly from Paris to Dakar non-stop last month, have been flying home *via* the Sahara, arrived back at Villacoublay on March 24. They were received by M. Laurent Eynac, Under Secretary for Air. It will be remembered that while crossing the Sahara on February 20 they lost their direction and ran out of petrol. It was some days before they got into touch with a French post and obtained fresh supplies of petrol. However, having done so, they concluded their journey in easy stages. They were flying a Breguet XIXA2 biplane (480 h.p. Renault).



THE NEW JUNKERS THREE-ENGINE MONOPLANE G.23: Built by the Swiss Ad Astra Company, this machine carries 10 passengers. An idea of the size is provided by placing on one of the wings of the large machine, the Bahnbedarf B.A.G.I. light monoplane with Blackburne "Tomtit" engine.

LIGHT 'PLANE AND GLIDER NOTES

Those wishing to get in touch with others interested in matters relating to gliding and the construction of gliders are invited to write to the Editor of FLIGHT, who will be pleased to publish such communications on this page, in order to bring together those who would like to co-operate, either in forming gliding clubs or in private collaboration.

LOW-POWER flying was the subject of a lecture given by Maj. R. W. Mayo in aid of the King Edward's Hospital Fund for London at the Acton and Chiswick Polytechnic on March 21. The lecturer sketched the history of flying from the early days, when the Wright brothers had to fly with about 30 h.p., through the War period when powers rose to 500 h.p., and to the post-War period when the need for economy resulted in gliding being taken up again, and from which developed the low-power or light 'plane of 1923 and 1924. Major Mayo expressed the opinion that a really satisfactory machine for general use could not be produced if engine capacities were limited to 1,100 c.c., and thought that 60 to 70 h.p. would be a suitable size of engine, as this would give wide speed range, good performance, and also enable more robust construction to be employed, with consequently longer life. He thought the establishment of light 'plane clubs would result in spreading the interest in flying, and that as a result of a greater demand aircraft manufacturers would be in a position to manufacture machines very much cheaper than is possible at present.

ALTHOUGH at the moment it is not permissible to refer in detail to the development work being carried out, it is possible to state that several firms are getting out light 'plane engines in readiness either for any light 'plane competition that may be held this year or for use by the light 'plane clubs. In several of these the Air Ministry is, we understand, directly interested, while in certain other cases the manufacturers have decided to take their chance on their type being "approved." It is of interest to note that the capacities of the engines on which work is proceeding range from 1,100 c.c. to 1,500 c.c., so that apparently there is as yet no definite certainty that the small engine will be banned because it is small, any more than there is that the larger engine will be ruled out because of its larger capacity. It is now quite a long time since we suggested that the capacity limitation be done away with and that some other basis be used. From the fact that these small engines are being developed, it seems evident that manufacturers are to be allowed fairly wide limits in the matter of engine capacity, and thus we may hope to see the small "super-efficient" engine being permitted to demonstrate its capacities alongside the larger capacity "slogger." This is all to the good, and should result in healthy competition. Incidentally, those who still believe that the extra-low power machine is a practical possibility will apparently be allowed another opportunity to prove their contention.

We think that a parallel, not strictly true, perhaps, but fairly so, is to be found in the motor world. Some years ago there was an attempt to develop a type of vehicle that became known as the cycle-car. A considerable measure of success was attained, but the type never really became popular, and the very light machine, with air-cooled engine, belt drive, etc., is practically never seen on the road nowadays. Its place has been taken by the light car, which is practically a small reproduction of the full-size motor-car. Is history going to repeat itself in the light 'plane class?

WHILE on the subject of the small engines, it may be mentioned that there is a probability that the Parnall "Pixie" of last year may make a tour of the light 'plane clubs. We sincerely trust this may be found possible, and that the idea may be taken up by other constructors of light 'planes. Actual demonstration flights would help enormously in assisting the clubs to increase their memberships, and it is to be feared that in certain sections of the country, sections where clubs have been formed, a light 'plane has never been seen. As it has been possible, without actual demonstration, to form these clubs and to get a really large membership, does it not appear likely that a few demonstration flights would do a great deal of good? There is, we think, something very fascinating about the light 'plane, something very much more intimate than one achieves with modern high-power fast aeroplanes. The racers fly high and fly fast, and the opportunity of watching their behaviour at close quarters is absent. A light 'plane, on the other hand, flies, or can fly, reasonably slow; it can fly very low, and every movement of rudder and

flaps can be followed by the spectators. If the question was asked, which form of racing was most popular in the days before the War, the answer would, we think, undoubtedly be the Hendon aerodrome races around the pylons. With modern high-speed machines this form of racing is impracticable for several reasons, but the light 'plane has all the elements required for racing "around the sticks" as we used to call it, and a revival of the Hendon Saturday afternoon races becomes a distinct possibility with the arrival of the light 'plane.

FROM the amount of correspondence that has reached us, it appears obvious that the light 'plane clubs are, generally speaking, very much in favour of our suggestion, made last week, that the clubs be allowed to use last year's Lypnne machines for the time being. The possibility of engine trouble does not appear to act as a deterrent. On the contrary, some of the clubs write to tell us that they ask nothing better, for a start, than to be allowed to tinker with engines and see what can be done with them. And, after all, is it not rather absurd for the Air Ministry to take the attitude: You must not play about with this machine and engine, it is not good for you. That the Air Ministry will not purchase last year's machines for the clubs is one thing. If the Air Ministry pays the piper, it should be allowed to call the tune, certainly, but if the clubs can make arrangements to acquire other types in addition to those presented by the Air Ministry, surely they should be allowed to do so, even if those types are "unblessed."

IN any case, the law of the land is that so long as an experimental aeroplane stays within the three-mile limit of an aerodrome it does not require any certificate, and so presumably the light 'plane clubs could fly any old thing they have a mind to without asking anyone's leave. That being so, we hope the clubs and manufacturers will get together with the object of co-operating, without prejudice to anything the Air Ministry may do in the way of "approved" types.

FOR the Vauville light 'plane meeting this summer eight machines have now been entered, the eighth being a Farman of the same type as that on which Drouhin won the Tour de France last year. The other seven entries were given in FLIGHT recently. Up to the present there are thus three Belgian, three French and two Dutch machines.

WE understand that there is a very good possibility of one of the Pander monoplanes being brought to England for demonstration purposes. This machine, it will be remembered, created a very favourable impression at the Paris Aero Show for its general clean lines no less than on account of its exquisite construction and finish. We understand that Pander en Zoonen hope to produce the machine at a very low price, and as its performance is very good it should be an attractive proposition. A two-seater on similar lines is, we believe, being produced.

THE Heinkel low-power monoplane described in this issue forms an interesting basis for comparison with the de Havilland "Moth." Neither machine is, strictly speaking, a light 'plane, but both are fairly low-power aeroplanes, and they are of much the same weight and power. The de Havilland Aircraft Company went very carefully into the question of monoplane or biplane before building the "Moth," and for the present, at any rate, decided in favour of the biplane type. The Heinkel is a very good example of what can be done with the monoplane type.

WITH the approach of the Circuit of Germany the question is being asked what engines are to be used. Foreign engines are not prohibited, but special marks are awarded for machines using German engines. Of the foreign engines the Bristol "Cherub" appears to be a favourite. Several new German engines are being developed, but it seems doubtful whether these will be ready in time for the competitions. Among the German engines is one of very unorthodox design, the Ego, which is a water-cooled 8-cylinder, in which pairs of cylinders are placed side by side, one combustion chamber being common to two cylinders. There are two crankshafts connected by gearing, and it is claimed that the advantage of this arrangement is that high speeds can be attained without imposing too severe stresses on the big-end bearings. The Ego has a bore of 50 mm. and a stroke of 60 mm.

MY 17,000 MILES FLIGHT

IN A D.H.50

By

Alan J. Cobham



EXCLUSIVE CONTRIBUTION TO
"FLIGHT"

LONDON—RANGOON—LONDON

By ALAN J. COBHAM

AIR VICE-MARSHAL SIR SEFTON BRANCKER, Director of Civil Aviation, flew in a small commercial passenger aeroplane, a de Havilland type 50, from England to India. The crew consisted of A. B. Elliot as engineer and myself as pilot in charge of the flight.

The chief reason of Sir Sefton's visit to India was to attend the conference and decide, after various sites had been surveyed with the other experts who had come out from England, where the airship port should be in India.

The great airship route, which is being, up to the present, entirely financed by the Imperial Government, will eventually run to Australia, with possible branch aeroplane lines running off the main airship route. The preliminary step will be to start a service to India, and after that other airship routes will quickly follow, including the extension to Australia and possibly a separate route to South Africa. Another route to South America may also be considered, and, no doubt, from

stunt flight, but one in which an aeroplane was used as a business proposition to carry out a certain purpose because the ordinary means of transport could not effectually do the job.

Although a big portion of the expense was borne by the Air Ministry, the major portion has been subscribed by the aircraft industry, including the Imperial Airways, Ltd., the De Havilland Aircraft Company, Sir Charles Wakefield, British Petroleum Company, the Aircraft Disposal Company, and the entire Society of British Aircraft Constructors, who believe that a flight of this nature would be good propaganda for British aircraft and prove the utility of commercial aviation in general.

We left Stag Lane Aerodrome, the headquarters of the De Havilland Aircraft Company at Edgware, on November 20, our first stop being Paris. There was a big gathering to see Sir Sefton off, despite the secrecy of the departure date.



The famous Buddhist Pagoda with solid gold roof at Rangoon.

the experience gained on the preliminary tests on these routes, giant airships will be planned and constructed to run the transatlantic service. However, it is evident that the "All Red" routes will be first considered, as aviation in its various branches, by speeding up communication, can do more than anything else to bind the Empire together.

By an airship route India will be four days from England and Australia eight or nine days, while South Africa will be about six or seven days' journey.

Sir Sefton Brancker flew to India for two reasons: firstly, because as the Director of Civil Aviation it is his belief that he should fly on all his Government work journeys; and, secondly, because it was the only possible way in which he could correctly survey the possibilities of the various aeroplane air routes and branch lines throughout Europe in connection with the Imperial Airways Company and other aeroplane lines that will link up with the airship routes in Egypt to Iraq, Baghdad, and later the Persian Gulf.

Therefore, this flight to India was not intended to be a

The aeroplane used was a De Havilland type 50, with a 230 h.p. Siddeley "Puma" engine. The machine has a neat cabin for four passengers and the pilot sits behind. Our load, which consisted of two passengers, a great deal of baggage, spares, and a lot of extra petrol, amounted to over half a ton weight, making the total weight in the air up to 4,300 lbs.

Sir Sefton Brancker stayed two days in Paris in conference with M. Flandin, the French Director of Aviation, and then proceeded with the results of his interviews to Cologne. The flight was uneventful except for the very bad weather, fog and rain, together made worse in patches by the smoke of busy towns, such as Liège and district, which seemed to be working full time with all furnaces belching forth. After a conference with the Commanding Chief at Cologne, Sir Sefton then flew on to Berlin. On the way we flew over the Ruhr district, and here every foundry and factory, although it was Sunday, appeared to be going full time, for all the thousands of chimney stacks seemed to be emitting clouds of smoke. At Berlin we were met by the German Air Minister,

the Director of Civil Aviation, a director of the Aero-Lloyd Company and the British Commission. The German Air Minister showed great interest in the D.H.50 aeroplane, and insisted that I explained all working parts to him.

After a stay of two days, in which the Air Vice-Marshal had many conferences relating to diplomatic negotiations regarding the Imperial Airway Company flying over Germany, we then flew to Warsaw.

The Poles were very keen that the Imperial Airway route, i.e., aeroplane route, should pass through Poland. Certainly their country is ideal for flying, having vast open, flat stretches with no obstructions and high mountains.

We left Warsaw, intending to fly to Lemburg in South-Eastern Poland. The country passed over on this flight was perfectly flat, with vast open fields and no trees, and it was here we experienced the exhilarating and thrilling sensation of flying at 100 m.p.h. very low over the ground. We skimmed along at 50 ft. from the earth for miles over this country, and, owing to the nature of the fields beneath, it was quite safe. After about an hour we ran into very low clouds, and as we went out of the sunshine and flew underneath them, it was like going into a refrigerator. The clouds got lower and eventually developed to thick fog on the ground, and so we had to turn back and land on the new Polish aerodrome at Ivangerod. The fog was caused by a south-east wind blowing over hundreds of miles of snow-covered plains in Roumania, and when it struck the warm earth it turned to fog.

We eventually got through to Lemburg, from where we wished to fly via the valley to Jassey and Bucharest, thus keeping the low level the entire way from England to Constantinople, proving the possibility of the route for commercial aircraft. Unfortunately, after Lemburg the entire route was covered in fog, and it seemed as though it might be there for days. After consideration I decided to fly direct from Lemburg to Bucharest, a distance of 500 miles over the Carpathian range of mountains which ran north and south, and stand out high above the fog.

The following morning we took off from Lemburg and

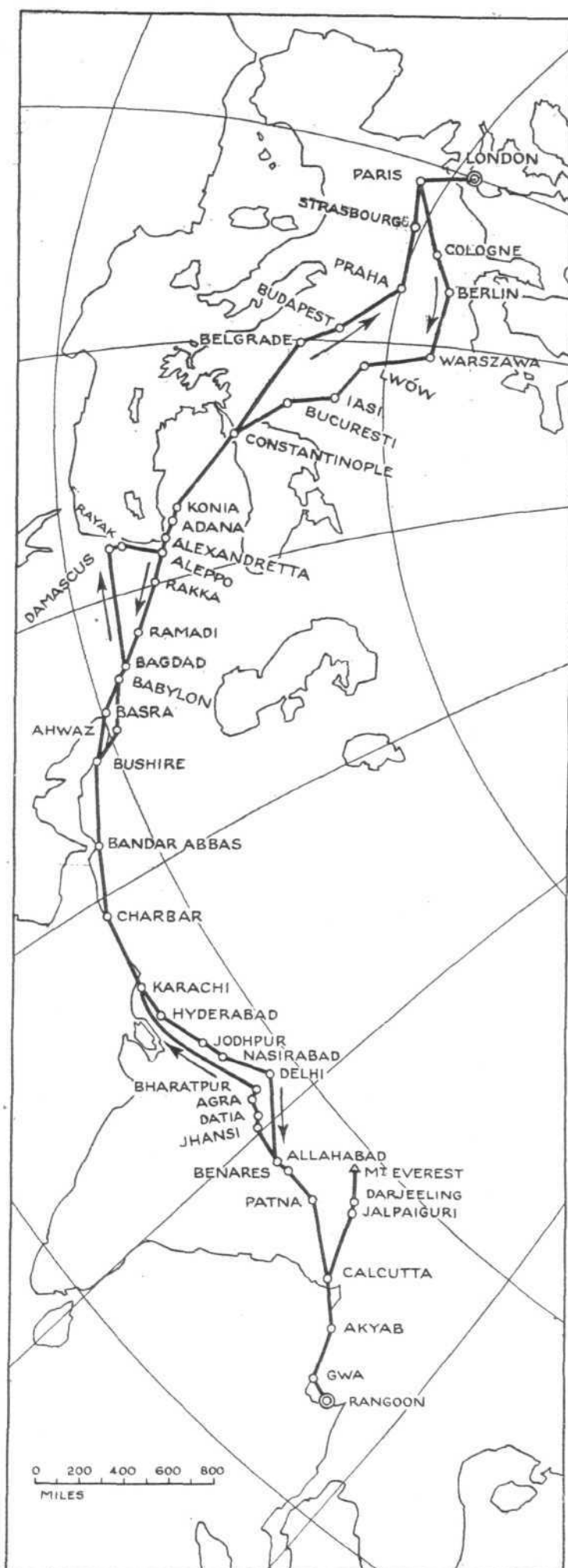
headed due south. We very soon met the fog and climbed above it and kept on our course until the snow-capped peaks of the Carpathian mountains came in sight, all glistening in the sunshine. For 350 miles we flew along the side of the range with a vast sea of fog over the lowlands on our left and the snow-capped mountains on our right.

At last we arrived at the plain where Bucharest is situated, and to our dismay discovered it was covered in thick fog. We were forced to land up in the mountains, which we did successfully. The following day it cleared and we got off again to Bucharest. The country side was covered in 3 ft. of snow, and we landed on a specially cleared patch on the aerodrome with high walls of snow on either side.

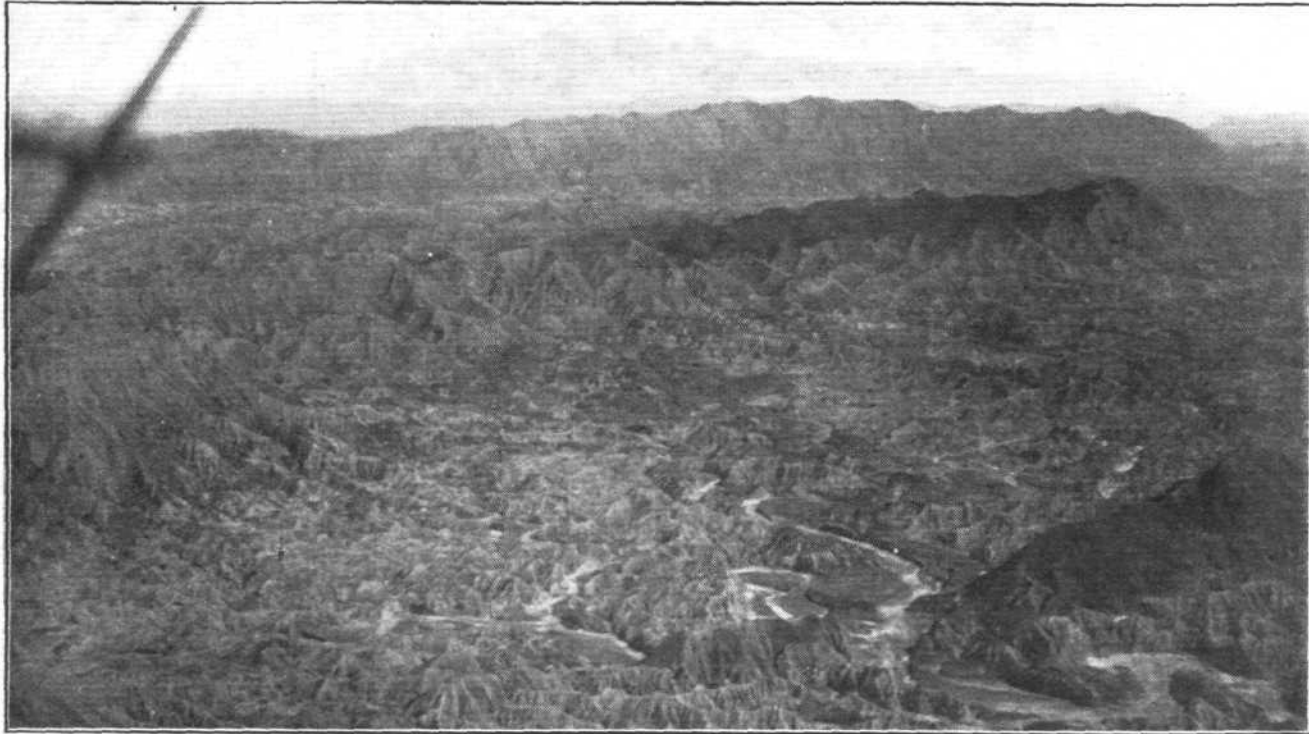
After business in Bucharest we flew to Constantinople over the wild uplands of Bulgaria, and as we approached the great city along the Bosphorus from the east we had the magnificent picture from the air of Constantinople, with its scores of minarets silhouetted against a setting sun that was going down into the sea of Marmora.

Two days after our arrival Sir Sefton Brancker left for Angora, where he was the guest of the Turkish Government. He stayed there a week discussing possible air routes, for Turkey is in a direct line between England and India.

We flew away from Constantinople and passed right over the heart of Anatolia to Konia in the centre of Asia Minor. The whole of this country is a very high tableland, 4,000 ft. above sea level with vast mountain ranges shooting up out of the plains. After a night at Konia next morning we started for French Syria. Soon after taking off we ran into low cloud and mist, which turned to sleet. We continued our way across the Konia Plain, and then started to climb and cross the Taurus Mountains. I crossed them by the one and only pass and got over at 5,000 ft., and then followed the long flight through the gorge. The bottom of the ravine was 5,000 ft. below us, and the mountains whose summits were in the clouds, were 5,000 ft. above us, and it was raining heavily all the time. When at last we reached the plain before Adana I flew east and landed at Alexandretta.



LONDON-RANGOON-LONDON: Sketch-map of the route followed.



Some of the country on the Persian Gulf does not look very inviting for a forced landing.

From here, the next day we climbed over the hills and went to Aleppo for lunch. We were entertained by the French military, and after about 50 men had pushed our machine through the mud to a dry strip of land we took off for the French outpost aerodrome at Rakka on the River Euphrates. The country in this part of the world is perfect for flying, and aerial services should be easy to maintain. From Rakka we followed the Euphrates down to Ramadi, the British Royal Air Force aerodrome, which is often used by the R.A.F. Mail running between Cairo and Baghdad.

From Ramadi we flew under low clouds at 50 ft. over the desert to Baghdad and landed in a sea of mud on the aerodrome. Owing to the nature of the soil one shower of rain is sufficient to turn the country side into liquid mud.

There was much to discuss at Baghdad, for it is proposed to

start an aeroplane route almost immediately between Ramadi, near Jerusalem, and Baghdad. It will be a civil concern subsidised by the home Government, and will bring Baghdad within 6 days of London, for passengers will alight at Port Said and take the train to Ramleh, whence they will fly in one day to Baghdad and, later on, possibly Basra in the same day, where passengers will catch the boat for India.

When the airship route starts, Baghdad will be within three days of England, for they will fly by airship to Egypt in two days and alight at Ishmalia, just above Cairo, and then proceed by aeroplane in one day to Baghdad.

The airship route to India should be started in late 1926, and to start with the route will mainly be over water, as up to the present the best known conditions for a commercial airship are at an altitude of a few hundred feet over the sea.



Vari-coloured rock formation on Persian Gulf.

And so the route will be over France and down the Mediterranean to Egypt, and then *via* the Red Sea and Indian Ocean to India. It is definitely fixed that the one stopping place will be at Ishmalia (just below Port Said), and a mooring mast is in course of construction.

After Baghdad we flew down the Tigris and across to the Euphrates to Basra. On the way we flew over Babylon and the ancient cradle of civilisation.

From Basra we flew over the vast swamps at the top of the Persian Gulf to Bushire. It is curious to note that ever since



AT BAGHDAD : Sqdn.-Ldr. Roderic Hill discussing the flight with General Sir Sefton Brancker, while in the background Mr. Cobham is busy with his camera. On the right is the C.O. of No. 8 Squadron, Sqdn.-Ldr. McLaughry.

we left England we had experienced a severe head wind. After Bushire we flew down the eastern shores of the lonely gulf to Bandar Abbas, where we stayed the night, and the next day continued our flight to Chahbar, and then along the last lonely 400 miles to Karachi and India at last and in sunshine, for with two exceptions we had had no sunshine since we left England. Sir Sefton Brancker had purposely chosen this period of the year so that the survey would be done under the worst conditions in order to form a reserved and sound report.

Our flight to India was one of intense interest and a variety

of experiences. To date, we had come the whole way on the same D.H.50 and Siddeley Puma engine, and throughout the flight we always had the aim in mind of getting home in that manner.

While we had a brief overhaul at Karachi, Sir Sefton Brancker went by train to Bombay to confer with the civil authorities regarding the erection of a mooring mast for the airship service. It was so arranged that I should rejoin him at Delhi, and accordingly set out with Elliot to fly there. The first part of our route lay *via* Hyderabad (Sind) and then over the great Sind Desert. We flew over a barren, bleak stretch of country from Karachi to the River Indus, and then cultivation started everywhere, being fed by the enormous irrigation scheme. We followed the little metre-gauge railway due East, and from the air one had a magnificent view and conception of the advance made by British enterprise in developing the irrigation scheme, for vast tracks of desert were claimed for cultivation. Eventually, the ground rose beneath us and the irrigation stopped, and we followed our little railway track into the desert.

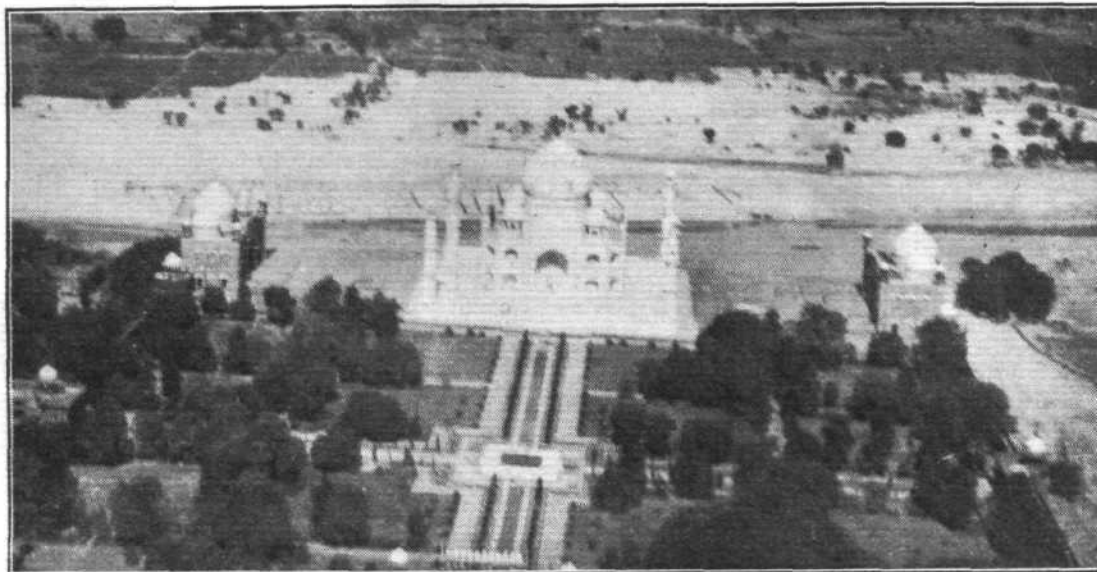
After about 300 miles, the ground fell away to a river bed, and we knew then we were not very far from our destination. We were making for Jodhpur, one of the oldest Indian States, and were to be the guests of His Highness the Maharajah. We had been flying for nearly six hours when the ancient fort built on the top of a rock stood out on the horizon. The Jodhpur estate possesses a private aerodrome, which I failed at first to notice when flying over the place, being attracted to a very large open, level space which looked good to land on. I very nearly disgraced myself by landing the machine in the middle of a match, for it happened to be the polo ground. However, I noticed it in time, and soon found the correct aerodrome.

From Jodhpur we flew over perfect flying country to Nasirabad, where we landed on the parade ground to refuel, and afterwards flew on to Imperial Delhi. We arrived late in the afternoon, and the sun was getting very low, casting a deep-red tint over all the new white buildings, and we had a perfect view of the lay-out of the new capital. Sir Sefton was waiting on the aerodrome for us, and I soon discovered that he had settled all his affairs for the time being, and was ready to push off the following day *en route* to Calcutta. I would like to mention here that the kindness and assistance rendered to us by the R.A.F. in India was really wonderful. Everyone seemed so very full out to help us in any little detail, and was so surprised when we gave them no trouble. On one occasion I discovered that one of my forward telegrams had been framed and part of the text, namely, the words "Would you be kind enough," were underlined. Evidently politeness was appreciated.

We left Delhi and flew to Allahabad, where we stayed one night, and took off the next morning intending to fly direct to Calcutta, nearly 500 miles away. On leaving Allahabad we passed over the point where the River Jumna and Ganges meet, and were fortunate enough to see the great annual



Two R.A.F. D.H.9's on the Maidan, Calcutta, after their flight down from the north.



The famous Taj
Mahal at Agra.

Hindu festival from the air. It was our intention throughout our flight to get as much experience with alternate routes as possible, and so on this flight, on the advice of an R.A.F. officer, I took a Northerly route *via* Patna and the Ganges to Calcutta. This course was not exactly a success, owing to its extra length and impossibility to force land through the country being for hundreds of miles a mass of paddy fields. Eventually, Calcutta came in sight, and I headed for the Maidan, which is a Government park which surrounds Fort William in the centre of the town.

There are no R.A.F. stations near Calcutta, and consequently all the excellent landing arrangements had to be made by the resident military officers, and the place they had prepared for me was only suitable for a north or south wind, and owing to a cross wind blowing when I arrived it would have



been necessary for me to have landed over trees and between trees on a very short run, and so, not wishing to run the risk of making an unsightly spectacle by overshooting or some such misadventure before so many thousands of people, I decided to look elsewhere for a landing ground. In despair I was turning towards Dum Duni Aerodrome, when I noticed that the centre of the race-course was clear, and conveniently situated for the wind, so I turned and sideslipped in and landed. In a few moments the crowd came tearing from the Ellenborough side where I had been expected to land, and almost the first person to greet Sir Sefton was Lady Lytton, the wife of the Governor of Bengal, who had galloped over on horseback to meet him.

It took an army of police to keep the crowd off the machine, until such time as they could erect a fence all round it, and

At Calcutta:

In the centre, Lord and Lady Lytton and their daughter, Lady Hermonia, discussing their trip in the D.H.50 with General Sir Sefton Brancker and Mr. Cobham; and on right, Government House, Calcutta, from the de Havilland 50.



MARCH 26, 1925

FLIGHT
THE AIRCRAFT
 ENGINEER
 AIRCRAFT

Native interest in
the D.H. 50 at
Jalpaiguri.



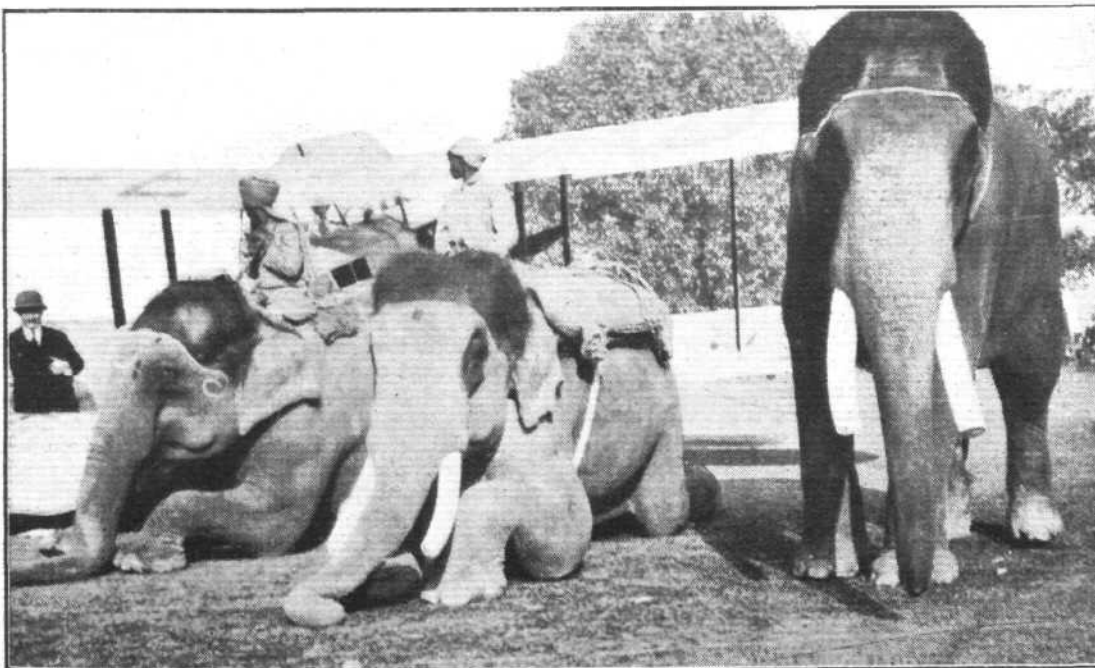
supply a permanent guard. It was at Calcutta that General Brancker was taken very ill and narrowly escaped pneumonia. He had been ailing all the way from Delhi, where it is evident that he caught a severe chill while driving in an open car; anyhow, I insist that he did not catch it flying in the D.H. 50. His illness, I suppose, delayed our schedule nearly a month, and had he not been so unfortunate, I feel sure we should have returned to England in the middle of February, as originally planned.

Many people in Calcutta talked enthusiastically about an air line to Darjeeling, which is the hill station where all Calcutta people go in summer-time, and General Brancker thought it would be a good idea while I was waiting for him, if I flew up there and made a little survey of the route. It was while on this flight that the idea of flying over the Himalayas and having a look at Everest occurred to me. Enough has already been said and written about this very little episode. About the splendours and magnificence of the sights that we witnessed, I leave to the imagination of any who read this story, and can only say that I was particularly fortunate in having an ideal day for the flight. A gentle south wind was blowing, which possibly gave slight uplifting currents. I am sure of one thing, that a strong north wind blowing in the region where I was flying would have made it practically impossible for a machine to fly owing to the

terrific down currents that would naturally occur as they came over such mountains as Kinchinjunga, which is 28,000 ft. At one time we were flying within a mile of this mountain, and the summit, which was 11,000 ft. above, seemed to be hanging right over us.

The air route to Jalpaiguri, which is a town at the foot of the hills, and would be the aerodrome for Darjeeling, is very simple, and would no doubt reduce the journey from Calcutta to Darjeeling from 18 hours, as at present, to a 6-hour trip. However, I have my doubts regarding the commercial success of this scheme.

On returning to Calcutta, I was glad to find that Sir Sefton had greatly recovered, and the doctors considered that a steady three-days' boat journey at that time of year to Rangoon would be an excellent form of convalescence, and it was so arranged that I should fly on down there and bring him back in the aeroplane, so that he would be able to see the possibilities of the Calcutta-Rangoon Air Route. Great keenness has been shown in official circles regarding this air line, for they are anxious to establish an air mail service between these two towns. At present the boat takes three days to do the journey, and by air it could be done in 10 hours, the distance being under 700 miles. Originally, it was thought that this was only possible as a sea-plane route owing to the extraordinary nature of the country to be flown



At Jalpaiguri the
ground was
cleared by ele-
phants, here seen
standing guard
over the D.H. 50.

At a creek about ten miles below Gwa, we turned due east, and followed the course of this little river inland. For about 40 to 50 miles it is necessary to pass over impenetrable jungle, in which case both seaplanes and aeroplanes are in precisely the same predicament regarding a forced landing. Even if one did land on the tree tops, I do not know how they would ever get out of the jungle, which is simply impassable. However, a three-engine machine could certainly make this 40 or 50-mile jump quite as safe as any other air transport line. Having passed over the jungle, we broke on to the plain of Burma and passed over innumerable rivers, including

A black and white aerial photograph showing a wide river flowing through a densely forested landscape. The river is light-colored, contrasting with the dark, wooded banks. In the distance, a small town or village is visible, nestled among the trees. The perspective is from a high vantage point, looking down at the river and the surrounding land. The image has a grainy, historical quality.

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face, giving two diagonal runs of 700 yards, with only 4-foot rails to clear for a take-off, which should make a good temporary landing ground. However, Sir Sefton found another site which at certain expense could be made into a permanent aerodrome. On a certain Sunday morning, our homeward journey started, for every mile after this would mean a mile nearer England. We had a cleared patch of 450 yards, between builders' huts and mounds of earth, with only the race-course rails ahead to clear, and in the shimmering heat of the midday sun, we managed to lift ourselves into the atmosphere without undue anxiety. Our return trip to Calcutta was precisely as the outward one already described, and I was able to point out all the little observations I had made to the D.C.A. during the flight. Communication between the pilot and passenger in the D.H.50 through the little connecting window between the cabin and cockpit is very simple, especially if one shuts the engine down.

On returning to Calcutta many invitations were waiting from various Indian States, who asked us to visit them before we left India. I think they were truly interested in seeing a passenger machine that had come all the way from England and intended getting home again. Before leaving Calcutta, Sir Sefton attended many conferences, regarding the future air routes of India. My own impression was that the simplest and first to be started, owing to its great advantage over the existing modes of transport was the Calcutta-Rangoon

been prepared by His Highness under the instructions of Elliot, who had gone on by train the day previously, and on this occasion we were able to conduct some very sound British aviation propaganda by taking up all the notables of the State, including His Highness.

From Datia we flew to Bhratpur for lunch, and then in the afternoon flew on to Delhi in time for dinner. On our way we passed over Agra, and photographed the famous Taj Mahal.

At Delhi Sir Sefton left us, for he wished to make a little tour of the N.W. district, where so many of our R.A.F. aerodromes are in operation, and in order to save time it was arranged that we should fly direct to Karachi, and get our machine overhauled in readiness for the final stage of our flight by the time Sir Sefton rejoined us. On our return to Karachi we had a most enthusiastic welcome from the R.A.F. depôt, who throughout our stay in India were always so keen and ready to help us. In fact, during our whole flight we seemed to receive kindness and assistance everywhere.

The overhaul of our machine consisted of a big top overhaul of the engine, and an inspection of the planes of the machine.

Regarding the engine, which of course was not taken out of the machine or the bearings interfered with, we found little or no serious trouble, and the only small renewals were for the usual wearing parts. The spares that might be necessary for this overhaul had been sent out in a small suit-case.



Sir Sefton Brancker with the Maharajah of Datia, by whom he was decorated on his arrival at the aerodrome.

line. But the great air line of India in the future will be Bombay to Calcutta. This necessitates a good deal of night flying, for which climatic conditions are very suitable, but it will naturally entail an extensive ground organisation in consequence with all its varying expenses. But the fact remains that undoubtedly it is the great commercial route, for you are linking up the two largest cities in India.

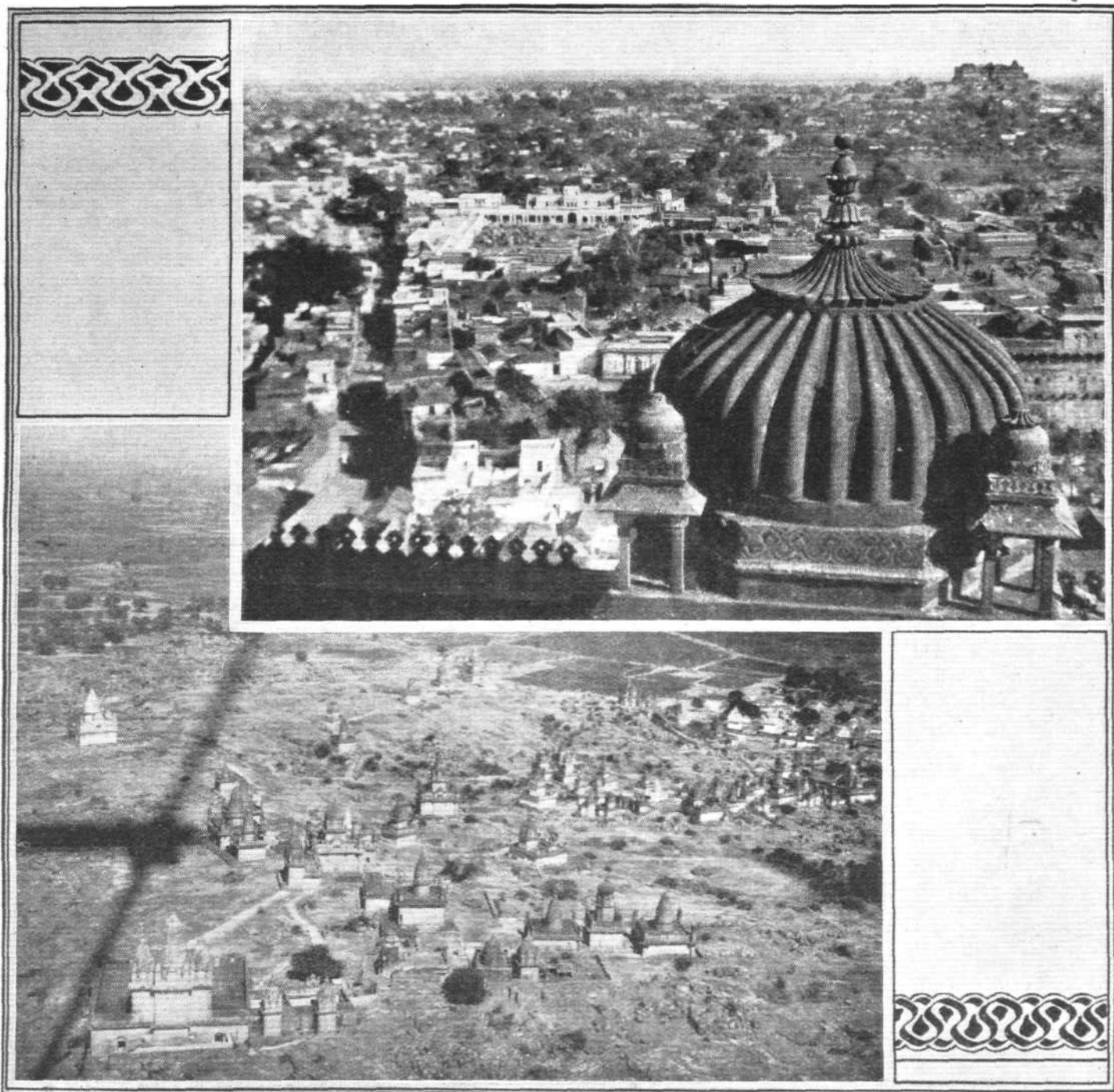
We left Calcutta and flew to Benares by a direct and southern route, which proved much better than our outward course. At Benares we were to be the guests of His Highness the Maharajah. They had wished us to land on a ground close to the Ramanagah Fortress, where H.H. lived, but from past experience I never take the advice of others with the exception of experts regarding the possibilities of landing grounds, and so I sent Elliot ahead to investigate, with the result that he wired me back that the only possible place to land was the military parade ground west of Benares. This turned out to be only just large enough, and I was thankful for a strong wind that was blowing in the right direction the next morning, which enabled us to get out of it.

From Benares we flew to Allahabad to re-fuel, and from there we went on to Jhansi. It was old and familiar country for General Brancker, who, twenty years ago, had spent some very happy years there as a junior officer in the Artillery. We landed on the landing ground at Jhansi, while Sir Sefton spent half an hour chatting with the Commandant, and we then flew on to Datia, where we were to be the guests of the Maharajah. A special aerodrome had

Regarding the aeroplane, with the exception of one internal cross-bracing wire, everything was found in perfect order. I should like to mention here that throughout the whole flight there was not a single breakage on the machine. The propeller question had caused us a little trouble; our original one had got out of alignment, and on taking off our spare one we discovered that it was already cracked, and so we carried on with our old one until such time as new ones from home were shipped out to us, so that we were never held up through propeller trouble.

Our flight from Karachi to Baghdad was more or less a detailed survey of the proposed air route, and throughout the flight data was collected regarding possible landing-grounds, wireless and telegraph possibilities, and all those things needed for a commercial air line. Up the Persian Gulf in a good many parts it is possible to go for hundreds of miles and be able to force land anywhere, and yet there are other parts of 30 and 50-mile stretches where it is not even possible to crash a machine respectably. So bad is the country in these patches that it would not be possible, even regardless of expense, to make any sort of landing-ground. It is quite clear from these remarks that the question of engine failure must be totally eliminated. How it is to be done is for the experts to say.

We left Karachi in the morning and flew 420 miles, arriving at Chahbar in time for lunch. Chahbar is simply a telegraph station with a natural billiard-table, rock-surface aerodrome along the side. After lunch we pushed off for Bundar Abbas,



Datia town from a D.H.50 and, below, the famous Jain temples near Datia.

but, owing to the strong head wind that sprang up, I doubted that I should reach there before dark, and so put down at Jask, which happens to be another telegraph station with another billiard-table surface natural aerodrome, miles square, alongside. The following day we flew on to breakfast at Bandar Abbas with the British Consulate.

From Bushire we flew *via* Ahwaz, where we stayed one night (Ahwaz is the headquarters of the Anglo-Persian Oil Company), and then pushed on up the Tigris to Baghdad.

Sir Sefton wished to visit the High Commissioner of French Syria on diplomatic business, and it was arranged that, instead of returning the way we had come—namely, down the Euphrates—we should go back direct over the Syrian Desert to Damascus, following the R.A.F. air route as far as Rutbar Wells, then following the Nairn transport tracks, which turn off at this point for Damascus. The Nairn transport cross the desert in 30 hours; we flew in six hours to Ryak, a French military aerodrome in the valley below Baalbeck, and then motored into Beyrout. The following day we went on to Aleppo, where we were hospitably received by the French military, and then flew again over Asia Minor to Constantinople.

From Constantinople we flew direct non-stop to Belgrade, *via* Adrinople, Philippopolis, Sofia, and Nish. This route entails climbing to 4,000 ft. to get over the pass into the plateau at Sofia, and climbing to the same height to get out

of it at the far end. From Belgrade we flew to Bucharest for lunch, and on to Vienna for dinner. After Vienna we flew to Prague. It was at Prague that we encountered such severe weather, and after three separate attempts to fly through the snowstorms in which we were forced to return to the aerodrome, on the fourth attempt we got right over Germany, over the Black Forest, where we were completely caught out and surrounded by snowstorms. I landed on a ploughed patch-up hill in good order, and the following morning we soon slipped the wings off and ran them back along the road on lorries, where we put them on again at an old German aerodrome, and managed to plough our way out of the snow and on to Strasburg and Paris. The following day we arrived in London.

Alan J. Cobham

THE 17,000 MILES FLIGHT

"Trifles" That Loom Large in the Success

ALAN COBHAM, in his fascinating "story" of the Big Flight to India and back, appearing elsewhere, has, it may be said, dealt with the human element in the flight. It is only fair, however, that the mechanical—or non-human—side, which, after all, played a very important part towards making this achievement possible, should receive special

Aircraft Co., Ltd., of Stag Lane Aerodrome, Edgware. The particular machine used on the big flight, G-EBFO, was built in July, 1923, and first flew at Stag Lane Aerodrome on August 8, 1923. Thereafter, besides being employed for testing and demonstrating the De Havilland automatic camber gear, it was flown intensively on the De Havilland



THE 17,000 MILES FLIGHT: "Trifle" No. 1. The D.H. 50 biplane, G-EBFO, which, piloted by Alan Cobham, groomed by Engineer Elliott, and carrying Sir Sefton Brancker, flew to India and back without failure of any kind.

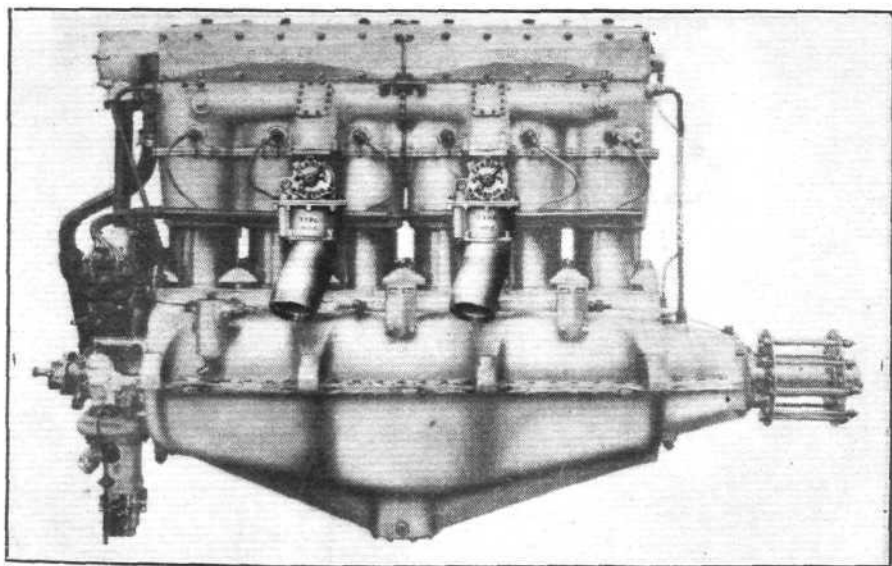
mention. All the more so, in fact, when it is considered that the flight was practically unorganised, so that the machine and all its equipment had, in a manner of speaking, to take "pot luck."

As we mentioned last week, in our report on the successful conclusion of the flight, we were particularly impressed by the remarkably clean and "new" appearance of the machine as it came to rest after landing on Croydon aerodrome—hardly a trace was visible of the hard and trying ordeal, under all kinds of conditions, that the machine had gone through. Its smart appearance, however, was by no means on the surface only, for we have it from Alan Cobham himself that the condition of the machine throughout is, as a matter of fact, practically as good as ever it was.

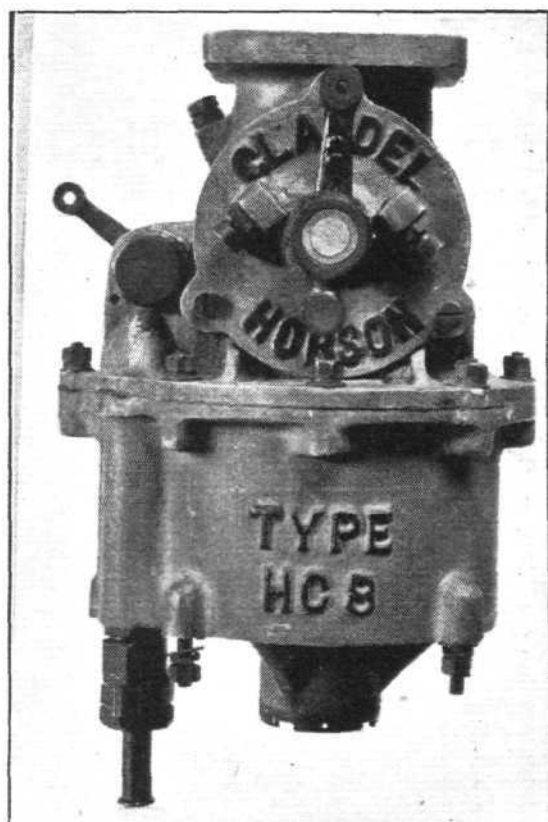
Now let us just review the "characters" of some of these "trifles" that have helped in the success of this historic

Aeroplane Hire Service, and on regular lines of Imperial Airways, Ltd. Up to the end of October last it had covered over 50,000 miles—the equivalent of twice round the world.

At the end of October it was taken off service to be equipped for the Indian flight, but except for the fitting of extra petrol tanks increasing its range to 8½ hours, practically no



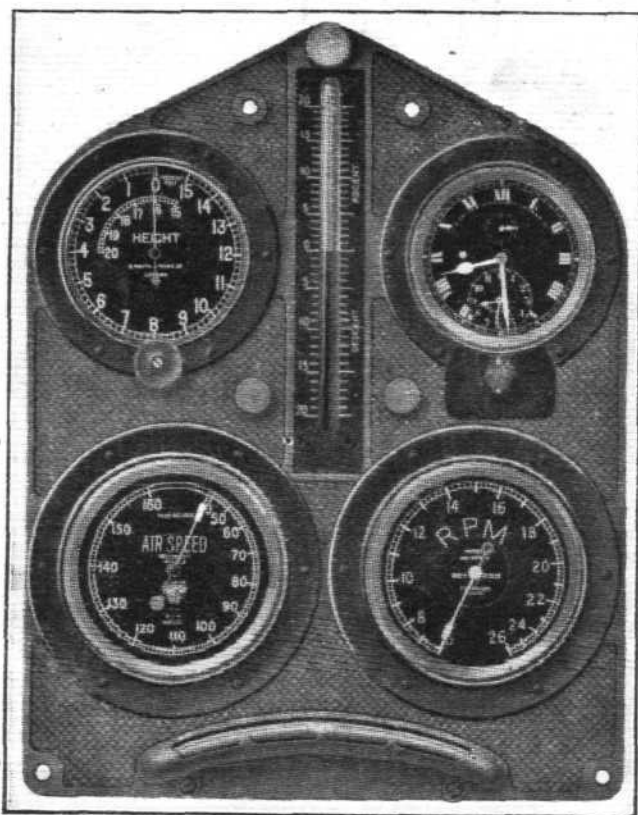
THE 17,000 MILES FLIGHT: "Trifle" No. 2. The 230 h.p. Siddeley "Puma" engine, supplied from stock by the Aircraft Disposal Co., Ltd., fitted to the D.H. 50 biplane G-EBFO.



The 17,000 Miles Flight: "Trifle" No. 3. The type H.C. 8 Claudel-Hobson carburettor which is fitted as standard to the "Puma"

flight. First and foremost we have the machine itself. This was the De Havilland type D.H.50 commercial biplane (a detailed description of which was published in *FLIGHT* for August 9, 1923), designed by Capt. Geoffrey de Havilland, O.B.E., A.F.C., F.R.Ae.S., and built by the De Havilland

alteration was made to the original machine. The D.H.50 type aeroplane has been used in many other successful aviation events, such as the King's Cup Race, 1924 (which it won), the International Traffic Competition at Gothenburg 1923, London to Africa, round Australia, etc.



THE 17,000 MILES FLIGHT: "Trifle" No. 6. A typical set of Smith's Aviation Instruments as used in the big flight. These include altitude recorder (top left), time-of-trip clock (top right), r.p.m. indicator (bottom right), air speed indicator (bottom left), longitudinal and lateral clinometers (centre).

The engine fitted in the D.H.50 is the well-known war engine, the Siddeley "Puma," a six-cylinder vertical water-cooled engine. That fitted in G-EBFO was supplied from stock by the Aircraft Disposal Co., Ltd., of Regent House, Kingsway, London, W.C. 2. It has been in the aeroplane since its departure for India, and except for one routine overhaul before the return journey, and the usual daily inspection, it required no further attention.

Amongst the contributing causes to the successful issue of this noteworthy aeroplane reliability trial, must undoubtedly be considered the absence of trouble with the Claudel-Hobson H.C.8 carburettor, which is standard on the Siddeley Puma engine, and was, of course, used during the journey. It is quite encouraging to know that the carburettor is British designed and manufactured throughout, and it has become so well-known that numbers of similar carburettors are now being exported to France for use on French-made engines.

It is unnecessary here to give a description of this well-known carburettor, but we might mention that one feature which is not quite obvious, and which assists very materially in a flight through varying climates and altitudes, is the fact that the carburettor is semi-automatic for air-density differences, and therefore requires very much less use of the altitude control.

While on the subject of the engine we wish to make special mention of the G. L. P. Henderson patent self-filling automatic doper employed throughout the flight, and which never once failed to provide easy starting of the engine. This device, about which we hope to have something more to say on a future occasion,

is the invention of Col. G. L. P. Henderson, who is well known in the flying world.

Another important "trifle" in connection with the engine must not be overlooked, viz., the sparking-plugs. On this occasion the famous K.L.G.-type F.12 plugs, manufactured by the Robin Hood Engineering Works, Ltd., of Putney Vale, London, S.W. 15, were employed, and we understand that only two sets of these plugs were taken on the trip, and throughout the flight plug trouble was unknown.

As regards fuel and oil, in the European section they got petrol of various "brands," but over the Asiatic section they relied upon the splendid organisation of the British Petroleum Co. for supplies of "B.P." aviation spirit. When Cobham made his little expedition to the Himalayas, however, he used Shell aviation spirit supplied by Shell-Mex, Ltd., of Kingsway, London, W.C. 2.

Perhaps it is superfluous to mention that Wakefield's Castrol "C" lubricating oil was used throughout the flight and that it seemed to "function" just as happily whether in the snowy regions of Central Europe or in the sun-baked deserts of the East.

Reference must be made to one or two other trifling trifles, more directly connected with the machine itself. For instance, during this 17,000-mile flight there were certain occasions when they had to land on *terra firma* and take off again. This is where the Palmer Aero tyres did their little bit—and they did it very well too. Many of the aerodromes were—well, somewhat rough and hard, while others consisted (wholly or in parts) of the very best mud. In either case the tyres stood up splendidly, and the special shape of tread prevented the machine from sinking into the soft places and turning turtle. In addition, the tyres put in some

50 miles' work on rough roads (when transporting the machine to suitable taking-off grounds), while, except for a small quantity of Baghdad air, the air in them was the same from start to finish.

Again, the woodwork of the machine has stood up to the very trying and varying conditions in an extraordinary manner. The silver spruce supplied by Mallinsons' bore no sign of a crack anywhere, while the "Mallite" plywood—used for the covering of the fuselage—supplied by the Aeronautical and Panel Plywood Co., Ltd., of Kingsland Road, London, E. 2, was as smooth and straight at the conclusion of the flight as it was the day it was first put on the machine.

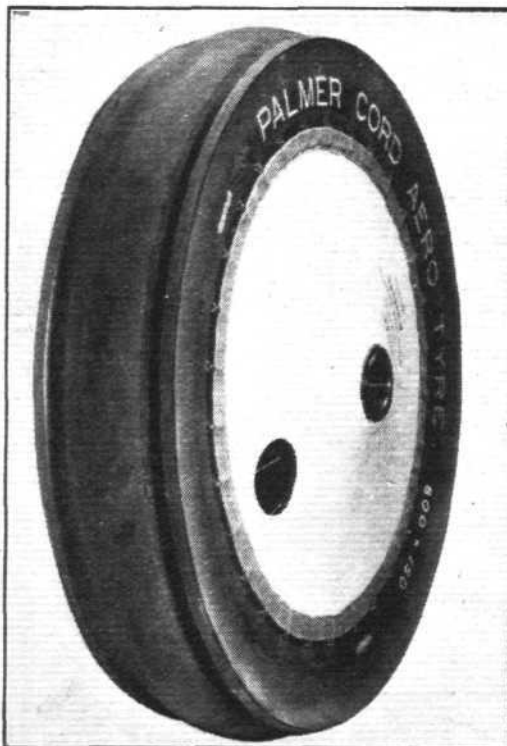
Very much the same thing may be said as to the condition of the wings—the fabric covering, which was doped with the famous Titanine T2S, being as tight and fresh as at the start.

Finally, but by no means least important, there were the various instruments which helped the pilot to carry on and maintain law and order. These were, naturally, supplied by S. Smith and Sons (M.A.), Ltd., of Cricklewood. These have, by now, come to be a standard-fitting-as-a-matter-of-course in nearly every big aviation event, so we do not think it will be necessary to say anything further in this connection.

There were, obviously, many other "trifles" that added their share to the success, and *all* did their duty with varying degrees of excellence.



The 17,000 Miles Flight: "Trifle" No. 4. The K.L.G. type F.12 sparking plug which was used in the Siddeley "Puma" without any trouble throughout the flight.



The 17,000 Miles Flight: "Trifle" No. 5. The especial Palmer Aero Tyre fitted to the D.H. 50 which, owing to the design of tread, enabled the machine to operate without difficulty over the hardest, roughest, or softest ground.

THE 17,000 MILES FLIGHT

Air Travellers Entertained at Banquet

ON March 23, Air Vice-Marshal Sir Sefton Brancker, Director of Civil Aviation, Mr. Alan J. Cobham, and Mr. A. B. Elliott were entertained at a banquet given by the Royal Aero Club and the Society of British Aircraft Constructors at the Savoy Hotel, London, in commemoration of their great flight to Burma and back. The gathering, which numbered close upon 200, was presided over by His Grace the Duke of Sutherland, Vice-President of the Royal Aero Club, and one-time Under-Secretary of State for Air. Letters regretting unavoidable absence were received from the Duke of Atholl and Lieut.-Col. Frank McClean (President and Chairman respectively of the Royal Aero Club), from Air-Marshal Sir Hugh Trenchard, and from Capt. Geoffrey de Havilland and others.

The Chairman, in proposing the toast of "Our Guests," referred to the time when, as Under-Secretary of State for Air, he worked with Sir Sefton Brancker at the Air Ministry. Sir Sefton was, he said, a joy to work with, and his keenness and enthusiasm were good to behold. He humorously referred to Sir Sefton as the best commercial air traveller the aviation trade had ever had, and, turning to the question of light 'planes, expressed the hope that the Air Ministry would not lose sight of the light 'plane movement. His Grace then referred to his promise to purchase, after last year's Lympne meeting, a light aeroplane for his own use, and said that Sir Geoffrey Salmond had been good enough to select a suitable machine for him. When this was not in use he would be pleased to place it at the disposal of the Royal Aero Club for use by members of the light 'plane section, an announcement that was greeted with cheers. In submitting the toast, he desired to couple with it the name of Mr. Alan Cobham, the great pilot, and also that of Mr. Elliott, the engineer who kept the "Puma" purring.

Sir Philip Sassoon, M.P., Under-Secretary of State for Air, who seconded the toast, referred to the very practical results which would come of the great feat performed by the three who had undertaken the flight. He said the flight had touched the imagination of the whole nation and had, perhaps, done more than any other single exploit to raise the prestige of British flying. Popularising flying as a safe and normal means of transport depended far less upon spectacular performances under abnormal conditions than upon such evidence as the guests of the evening had given, by their flight, of the possibility of covering with absolute safety great distances without other preparations than such as would obtain in starting a commercial air route. The flight marked a very significant and most hopeful move in the development of civil aviation.

Mr. T. O. M. Sopwith, chairman of the S.B.A.C., in supporting the toast, said that the flight was one of the great flights of history, because it had been carried out without special forward organisation, and much in the same way as if Sir Sefton Brancker had gone to a taxi-driver at Hyde Park and asked him to take them to India. Referring to the financing of the flight, Mr. Sopwith said that it was a joint effort, and that when the subject was first put forward, Mr. C. R. Fairey, who was then chairman of the S.B.A.C., had undertaken to guarantee the amount asked for. Having done this, he (Mr. Fairey) had approached the other members of the S.B.A.C., and in no instance had he met with a refusal. The "trade" had been absolutely without jealousy as to whose machine and engine were to be used, and had paid their share willingly and as good sportsmen. Among the firms which had paid more than their share of the expenses were the de Havilland Aircraft Company, the Aircraft Disposal Company, the Anglo-Persian Oil Company, and Wakefield & Co. In conclusion, he emphasised the point that the flight was made on a perfectly standard production machine, and not on one in any way specially built for the flight.

Air Vice-Marshal Sir Sefton Brancker, in replying to the toast, said that he was proud of having been a sleeping partner in a very fine feat of airmanship. The credit for the flight belonged to the D.H.50 and the "Puma" engine, which had served them wonderfully well, and to the pilot and engineer of the flight. They had been a very happy family from start to finish. He had been particularly impressed by the comfort of flying. It was never too hot and never too cold, and he firmly believed that one could fly continuously night and day without nearly as much fatigue and unpleasantness as that experienced in ordinary railway travel. Flying in the East was much easier than in this country, and in no case was it necessary to go higher than 6,000 ft. Sir Sefton paid a tribute

to the assistance they had received everywhere and said the camaraderie of the air was absolutely irreproachable. Air transport helped enormously towards the general peace of Europe and the better mutual understanding of the nations.

Mr. Alan J. Cobham said flying was really very simple. They had meant to return just as they started, and that intention had been successfully accomplished. There was really nothing wonderful about the flight to India and back, and any flight could be made an ordinary affair if properly handled. With regard to the future he quite thought that such a flight, to India and back, would be quite an everyday occurrence in ten or even in five years' time. What was needed above all was to teach the man in the street about flying, and he thought their 17,000 miles flight was encouraging mainly because it had proved the simplicity of flying, and perhaps it would help people to look to aviation as a practical proposition.

Mr. A. B. Elliott supported Mr. Cobham in the statement that there was really very little credit due to the crew, and that most of it should go to the machine and engine, neither of which had given any trouble worth mentioning.

Sir Charles Wakefield, proposing the toast of "Aviation," emphasised the fact that the pre-eminent factor in the progress of aviation had been the human element, and that, therefore, we should always put first in order of importance the men who had, by their personal bravery and unselfishness, forced the pace of progress. Sir Charles said it would not be seemly for him to dwell upon the scientific and technical side of aviation in an assembly where the highest aeronautical genius was so well represented. He would, however, like to refer to the vast mass of intricate calculations and experiments that had gone to the making of this great progress. In improvement of controls, and of stability, the study of strength factors, alighting gear, and a host of other vital details, Britain had made valuable contributions. Today in potential production of all the proved and essential types of aircraft we were well established. The epoch-making flight to India by Sir Sefton Brancker and Mr. Cobham brought within reach further developments in the practical organisation of air services.

Turning to the question of light 'planes, Sir Charles thought that here we should have before long a link between aviation as a branch of commerce or an arm of national defence, and aviation as part of the life of the nation. The light 'plane would enable the keen and intelligent young man to become an airman for the sheer love of it. It should not be difficult in future to recruit the ideal type of man for the R.A.F. and for commercial aviation. The outlook for aviation was bright, but much yet remained to be done. Two men had blazed the trail to India; it yet remained to establish an air route, the first of many world paths for air travel and transport. Those who had faith in the possibility must stimulate the growth of the enthusiasm for aviation in a yet wider public. He gave the toast "Aviation," with which he coupled the name of Lieut.-Col. Moore-Brabazon. As the holder of aviator's certificate No. 1 there could be no more appropriate choice as respondent to such a toast.

Lieut.-Col. J. T. C. Moore-Brabazon, M.P., in reply, said he hoped the flight would hasten the time when throughout the world we should see British aircraft at every great town, as we saw British ships at every great port, spreading our trade and carrying our flag.

Among those present were: Air Vice-Marshal Sir W. Geoffrey H. Salmond, Lieut.-Col. J. T. C. Moore-Brabazon, M.P., Admiral Sir E. J. W. Slade, Sir Charles Wakefield, Mr. F. Powell (chairman of the Anglo-American Oil Company), Mr. T. O. M. Sopwith (chairman of the Society of British Aircraft Constructors), Capt. H. E. P. D. Acland and Mr. H. T. Vane (vice-chairmen of the Society of British Aircraft Constructors), Air-Comdr. A. M. Longmore, Sir Samuel Instone, Capt. L. M. McNamee, Comdr. J. H. Towers (U.S.A. Naval Attaché), Mr. G. Holt-Thomas, Maj. H. C. Davidson (U.S.A. Army Attaché), Lord Edward A. Grosvenor, Lieut.-Col. M. O. Darby, Mr. Harry Preston, Lieut.-Col. M. O'Gorman, Col. F. Lindsay Lloyd, Lieut.-Col. C. B. Heald, Admiral Mark Kerr, Rear-Admiral Murray F. Sueter, Lieut.-Col. F. C. Sheldermine, Mr. F. Handley Page, Mr. P. W. Walker, Mr. F. Hedges Butler, Mr. C. R. Fairey, Mr. A. V. Roe, Mr. C. V. Allen (secretary of the Society of British Aircraft Constructors), Lieut.-Comdr. H. E. Perrin (secretary of the Royal Aero Club), Lieut.-Col. J. Barrett Lennard, Wing-Comdr. T. O'B. Hubbard, and Maj. Woods Humphrey.

PRACTICAL NAVIGATION OF AIRCRAFT

THE paper read before the Royal Aeronautical Society by Captain F. Tymms, M.C., on March 19, under above title dealt very fully indeed with the subject, the paper being one of the longest ever delivered before that society. Unfortunately, space does not permit of publishing the paper in full, and the subject is not one which lends itself to extracting certain portions. We must, therefore, advise our readers to obtain a forthcoming issue of the society's journal in which the paper will be published in full. Extracts being, in a case like the present, of but small value, we shall not attempt to do other than give the briefest outline of the subjects dealt with by Capt. Tymms, referring our readers for details to the publication mentioned above.

In his introduction the lecturer pointed out that the general principles of aerial navigation are in no way new, and that it was only in the application of these principles that progress had been made. Navigation resolved itself into two problems, the setting and keeping of a course, and the fixing of position. The number of ways of doing the first were few, but of the second there were many.

On the subject of maps the lecturer said Mercator's projection was to be preferred, in spite of certain criticisms, and had been rightly chosen as a basis for the general sheets of the International Aeronautical Maps. There was a fairly general view that a map for aerial navigation should be a picture of the earth as seen from an aeroplane. This was a sound principle, subject to the limitation of all principles, that it should not be ridden to death.

Concerning compasses, Captain Tymms said that the development of the magnetic compass had reached a higher standard in England than in any other country. Reference was made to turn indicators as a necessary adjunct to compasses, and also to drift indicators, notably the periscopic

type, which had given good results as used by the American Round-the-World fliers.

From the subject of maintenance of direction, the lecturer proceeded to the estimation of position, or dead reckoning. Direction-finding wireless was dealt with in both its forms, *i.e.*, D.F. by ground stations and D.F. in the machine.

Turning next to astronomical navigation, the lecturer stated that the value of this to aerial navigation was a debatable point, but a knowledge of the problems involved was of undoubted advantage. He, therefore dealt with some of the instruments employed, notably the R.A.E. bubble sextant.

Captain Tymms pointed out that flying in fog was a problem of engines and of landing rather than one of navigation, but referred to two of the most promising methods of assisting aircraft in landing in a fog. One of these was the use of the Loth Leader Cable, and the other was sound location. The latter was not satisfactory, the range being insufficient and a certain time elapsing before a pilot could be told where he was, but the former promised to comply with all the requirements.

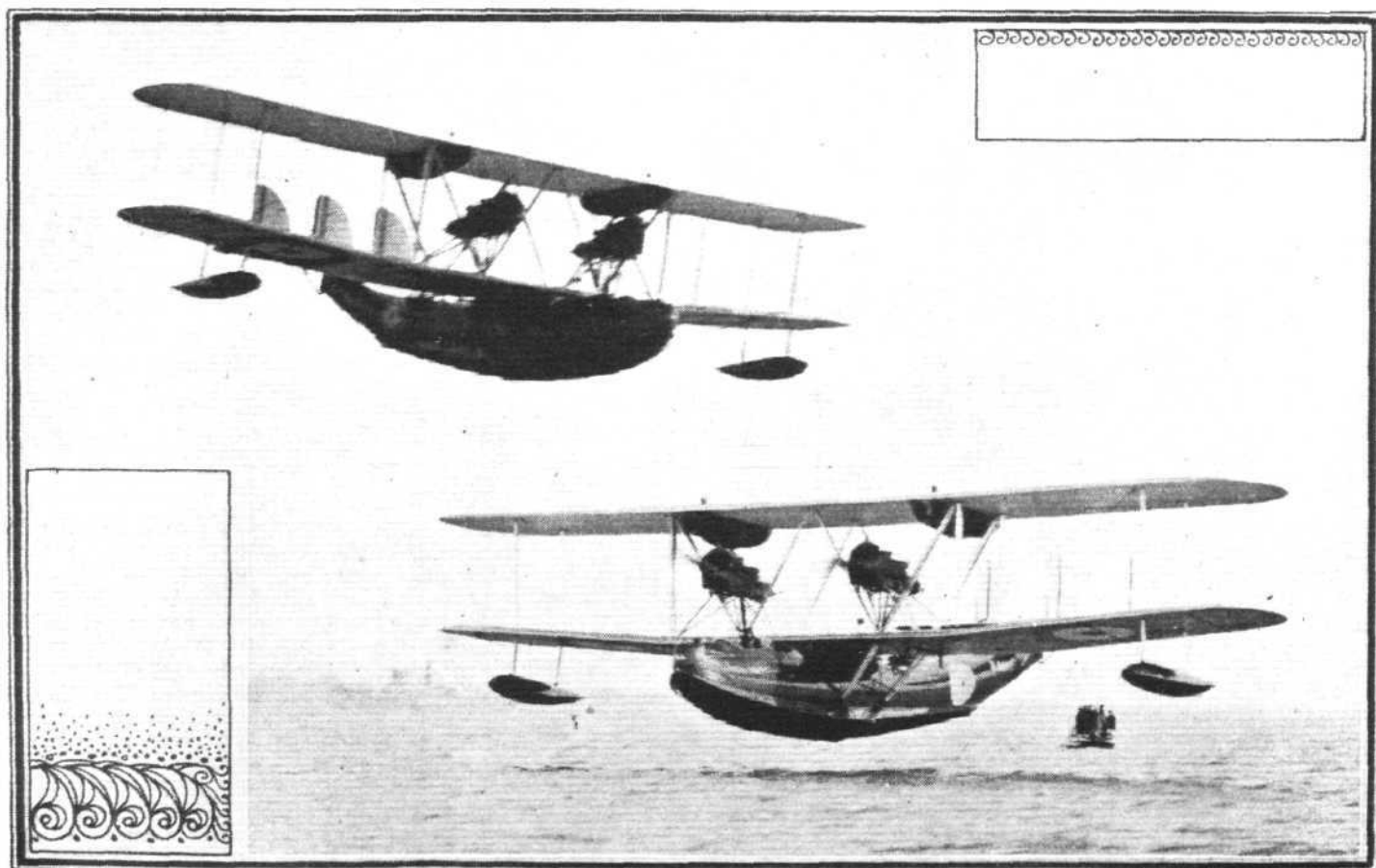
The lecturer also indicated what contribution navigation could make to the solution of the problem of night flying. When the ground could be kept in view the destination could be reached by observation of drift, for which even on the darkest night there was generally enough light. In cloudy weather, especially with low clouds, the problem was more serious, and the only way out was to fly over the clouds, a problem which presented difficulties identical with those concerning flying in a fog.

The final part of Captain Tymms' very interesting and instructive paper dealt with the subject of accommodation for navigators in aircraft and the rules governing the carriage of navigators.

R.A.F. Fatal Flying Accident

THE Air Ministry regrets to announce that as a result of an accident in Waziristan, India, to a D.H.9A of No. 27

Squadron, Risalpur, Nowshera, on March 21, Flying Officer Edward John Dashwood, the pilot of the aircraft, died of injuries and Flying Officer Noel Cecil Hayter-Hames was killed.



THE LATEST SUPERMARINE FLYING BOAT: The "Southampton," fitted with two Napier "Lion" engines, is of typical Supermarine lines, but has three fins and three rudders, although the horizontal tail is of monoplane type

THE ROYAL AIR FORCE

London Gazette, March 17, 1925

General Duties Branch

The following Pilot Officers are promoted to rank of Flying Officer:—A. R. Buchanan; Jan. 17. A. R. Perry; Feb. 14. A. D. Davis, F. V. Beamish, C. K. J. Coggle, F. F. W. Hall; Feb. 15. Flying Officer F. L. Woleedge (Capt. Indian Army, retired) is granted hon. rank of Flight Lieut.; March 5. Flying Officer A. M. West is transferred to Reserve, Class A; Mar. 14. The short service commission of Pilot Officer on probation A. E. Carpenter is terminated on cessation of duty; Feb. 20.

Stores Branch

Flying Officer H. N. Stevens is placed on retired list on account of ill-health; Mar. 18.

Reserve of Air Force Officers

H. D. Morley is granted a commission in Class A, General Duties Branch, as a Pilot Officer on probation; Mar. 17.

The following are confirmed in rank:—Flying Offrs.—W. E. de B. Diamond; Mar. 16; G. R. Schooling; Mar. 16. Pilot Offrs.—P. J. Waller; Feb. 19. A. E. Ansell; Mar. 16. H. W. Petter; Mar. 16. J. G. Webster; Mar. 16. Flying Offr. R. M. Smith is removed from the Service; Mar. 9.

Memoranda

The permission granted to Sec. Lieut. M. A. K. Smith to retain his rank is withdrawn on his enlistment in the Army; Feb. 11.

The following Lieuts. are deprived of permission to retain rank on conviction by the Civil Power:—J. B. Pirie; Jan. 20. D. V. D. Thomas; Feb. 10.

London Gazette, March 20, 1925

Gp. Capt. L. W. Brabazon Rees, V.C., O.B.E., M.C., A.F.C., is appointed an Air Aide-de-Camp to His Majesty the King; March 6.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

General Duties Branch

Wing Commander: W. H. Primrose, D.F.C., to H.Q., Palestine, for Air Staff Duties; 7.3.25.

Squadron Leaders: A. F. Brooke, to No. 17 Sq., Hawkinge; 14.3.25. C. E. H. James, M.C., to Aircraft Depot, Iraq; 1.3.25. J. C. Slessor, M.C., to No. 4 Sqdn., S. Farnborough; 1.4.25.

Flight Lieuts.: B. R. Carter, A.F.C., to No. 29 Sqdn., Duxford, instead of to No. 99 Sqdn., as previously notified; 19.3.25. S. D. Macdonald, D.F.C., to No. 55 Sqdn., Iraq; 3.3.25.

Flying Officers: R. C. B. Brading, to No. 41 Sqdn., Northolt; 16.3.25. (Hon. Flight-Lieut.) R. O. Rigg, to No. 60 Sqdn., India; 13.3.25. A. G. S. Tuke, to No. 14 Sqdn., Palestine; 11.3.25. E. H. Rundle, to No. 1 Stores Depot, Kidbrooke; 23.3.25. A. G. Thackray, to No. 444 Flight, Lee-on-Solent; 23.3.25. (Hon. Flight-Lieut.) F. P. Smythies, to Marine Aircraft Experimental Estab., Felixstowe; 17.3.25. (Hon. Flight-Lieut.) G. A. Cavis-Brown, to R.A.F. Base, Gosport; 18.3.25. W. E. Purdin, to No. 6 Sqdn., Iraq; 5.2.25. H. J. Hunter, to No. 208 Sqdn., Egypt; 9.3.25. J. V. Kelly and (Hon. Flight-Lieut.) L. P. Winters, to No. 45 Sqdn., Iraq; 5.2.25. J. H. Parry, to No. 99 Sqdn., Birmham Newton; 1.4.25.

Pilot Officers: H. E. Nowell, to No. 2 Sqdn., Manston, on appointment to a Permanent Commn., from Cadet College; 9.3.25. J. J. Fitzgerald, to No. 84 Sqdn., Iraq; 5.2.25. J. E. Preston and H. Thomas, to No. 70 Sqdn., Iraq; 5.2.25. H. M. Whittle, to No. 5 Flying Training Sch., Sealand, on appointment to a Permanent Commn.; 15.3.25. N. C. Walker, to No. 9 Sqdn., Manston, on appointment to a Permanent Commn., from

Cadet College; 17.3.25. J. H. C. Wake, to No. 24 Sqdn., Kenley, on appointment to a Permanent Commn.; 17.3.25.

Stores Branch

Flight Lieuts.: R. Adams, to R.A.F. Depot, on transfer to Home Estab.; 2.3.25. K. A. Smith, to R.A.F. Base, Gosport; 23.3.25. A. Latimer, to Station H.Q., Birmham Newton; 23.3.25.

Flying Officers: H. B. Hawker, to No. 58 Sqdn., Worthy Down; 4.3.25. H. J. Thomas, to No. 4 Stores Depot, Ruislip; 23.3.25. E. N. D. Worsley, to No. 1 Schl. of Tech. Training (Boys), Halton; 23.3.25. R. M. Thomas, to No. 100 Sqdn., Spittlegate; 23.3.25. E. A. Slater, to No. 11 Sqdn., Netheravon; 23.3.25. F. W. van Blommestein, to Electrical and Wireless Sch., Flowerdown; 23.3.25. J. R. Brown, to Inland Area Aircraft Depot, Henlow; 23.3.25.

Accountant Branch

Flying Officer: F. L. Wood, to R.A.F. British Hospital, Iraq; 24.1.25.

Medical Branch

Squadron Leader: P. T. Rutherford, O.B.E., to Aircraft Depot, Egypt; 1.3.25.

Flight Lieuts.: E. N. H. Gray, D.P.H., to Station Commandant, Iraq; 7.2.25. J. D. Leahy, M.C., M.B., B.A., to R.A.F. British Hospital, Iraq; 7.2.25. G. R. Nodwell, M.B., to Basrah Group H.Q.; 9.2.25. (Hon. Sqdn. Ldr.) F. W. Squair, M.B., T.D., and G. M. Mellor, to Inspector of Recruiting; 1.4.25. E. A. Lumley, M.C., M.B., to Basrah Combined Hospital; 28.2.25. H. J. Higgins (Dental) to H.Q., Egypt; 28.12.24.

Flying Officers: D. Magrath, M.B., to No. 4 Sqdn., S. Farnborough; 12.3.25. B. Pollard, to No. 2 Flying Training Sch., Digby; 20.2.25.

IN PARLIAMENT

Aircraft Carriers

COMMANDER BELLAIRS on March 18 asked the First Lord of the Admiralty the cost of each air plane and pilot per annum carried in an aircraft carrier in peace time, spreading the whole annual cost of the carrier over the number of aircraft carried, and allowing for interest on first cost and replacement of aircraft for their allotted life and interest on first cost and replacement of aircraft carriers after 20 years, with all the incidental charges of pay allowances, victualling stores, fuel, repairs, and liability in regard to retired pay and pensions?

Mr. Davidson: The present figure is approximately £20,900.

Air Officers and Foreign Languages

MR. ROBERT HUDSON asked the Secretary of State for Air whether any allowances are granted to officers of the Royal Air Force for proficiency in foreign languages; if so, what is the average amount granted to an officer; and how many officers have qualified for receipt thereof?

The Under-Secretary of State for Air (Major Sir Philip Sassoon): The Regulations governing the issue of awards for proficiency in foreign languages to Royal Air Force officers are contained in paragraphs 396 to 416 of the King's Regulations and Air Council Instructions for the Royal Air Force. The amounts of the awards, which depend on the degree of proficiency attained and also, for Arabic and Japanese, on whether the officer is serving at home or abroad, are £12 or £24 for French, £25 or £50 for German, £20 or £120 for Arabic, and up to £250 for Japanese. The number of officers who have qualified for awards are 12 for French, seven for German, eight for Arabic, and six for Japanese. Royal Air Force officers in India are eligible for awards under Indian Regulations, and inquiry in regard to these should be made of the India Office.

Passenger Aeroplanes and Altitude

CAPTAIN GARRO-JONES asked the Secretary of State for Air whether he will seek to incorporate in international rules a minimum altitude at which passenger-carrying machines on the London-Paris service shall cross the English Channel?

Sir P. Sassoon: It is not practicable, owing to the variability of atmospheric conditions, to lay down a minimum altitude below which aircraft must not fly when crossing the English Channel. I may add, however, that higher flying, that is, above rather than below the clouds, will be gradually promoted by the development of aircraft instruments to facilitate navigation in fog.

Captain Garro-Jones: Is the hon. gentleman not aware of the variability of atmospheric conditions which makes a minimum altitude necessary?

Sir P. Sassoon: All pilots prefer to fly above the clouds rather than below. Owing to the variability of the atmosphere it is not always possible to fly above the clouds.

Captain Garro-Jones: Would it not be possible to fix a limit below which pilots must not fly?

Sir P. Sassoon: No.

Sir Harry Brittain: Would the hon. gentleman arrange for aerial police-traps for pilots?

R.A.F. Personnel

MAJOR GLYN asked what is the total strength of the Royal Air Force, including those serving in India, showing officers, warrant officers, non-commissioned officers, airmen, and boys of the regular establishment, and also civilians both permanently employed and those employed as civilian labourers, each separately; what is the total number in each of the above categories who actually hold pilots' certificates; how many in each category are under instruction to fly; how many in each category are employed in the construction, repair and maintenance of machines borne on the strength of units; and how many are in each category employed in stores depots at home and overseas, respectively?

Sir S. Hoare: As regards the first part of the question, the total strength of the Royal Air Force is 3,282 officers, 115 cadets, 292 warrant officers, 4,512 non-commissioned officers, 22,049 aircraftsmen, 2,406 boys. As regards civilians employed, on the assumption that by "civilians permanently employed" and "those employed as civilian labourers" my hon. and gallant friend refers to non-industrials and industrials, respectively, the figures are 2,744 and 14,179 respectively.

As regards the second part, there are 2,038 officers and 107 warrant officers and non-commissioned officers qualified as pilots, but no information is available as to the number of civilian employees holding pilots' certificates.

As regards the third part, 274 officers and 38 warrant officers, non-commissioned officers and aircraftsmen are under flying instruction. I am not aware that any civilian employees are under flying instruction.

As regards the fourth part, about 6,250 warrant officers, non-commissioned officers and aircraftsmen, and 87 non-industrial and 1,397 industrial civilians belong to trades directly concerned with the construction and repair of aircraft and engines, and also with maintenance, but many others are employed on duties connected with maintenance, etc., in a broad sense. It is impossible to give a corresponding figure for officers, since their duties are not confined to this kind of work.

As regards the last part of the question, there are 51 officers, 315 non-industrial and 2,067 industrial civilians employed at home stores depots, and 28 officers, 310 warrant officers, non-commissioned officers and aircraftsmen, and 36 non-industrial and 256 industrial civilians employed at stores depots overseas.

28th Squadron Old Boys' Association

A REUNION SOCIAL for members of the 28th Squadron (R.A.F.) Old Boys' Association and their friends will be held on Saturday, April 4, commencing at 6 p.m. sharp, at Shearn's Restaurant, 231, Tottenham Court Road. This

will take the form of a whist drive, followed by dances and musical items. Tickets, 3s. (single) and 5s. 6d. (double), including refreshments, may be obtained from the Hon. Secretary of the Association, 102, Camden Street, London, N.W. 1.

AIR POST STAMPS

By DOUGLAS B. ARMSTRONG

Aero Stamps in Prospect

WITH many new air lines to be opened up during the next few months, there is prospect of some interesting additions to the aero collection in the year of grace 1925. Several have already been foreshadowed in this column, including new air-post stamps from Siam, Finland, Sweden, Portugal, and Czecho-Slovakia. Germany, too, is stated to have a new series in course of preparation, showing a vignette of the ZR.3, which will be issued and sold at the forthcoming Aero Exhibition in Munich. Another country whence aero stamps may be expected is Persia, and Egypt is about to bring into use a special stamp for the flying mail in the denomination 27 milliemes, with a picture of an aeroplane surmounted by the words "Aerial Post."

The present American air post stamps have been condemned as not being sufficiently distinctive in character, so that they are shortly to be replaced by a complete new issue engraved in larger and more striking format. New Russian air-post stamps are also on the tapis.

Air Stamps from Siam

AFTER many delays and false reports the Siamese air post stamps are now an actuality. Engraved and recess printed in large oblong format by the London firm of Waterlow and Sons, they form a striking addition to the aero collection with their awesome figure of the mythological "Krug," or bird-man, who, with outspread wings, furnishes the chief motif of the design. The stamps, which have the words "Siam Air Mail" across the top, and a similar inscription in native characters at the foot, are four in number comprising three satangs brown, five satangs green, 15 satangs carmine, 25 satangs indigo. The strange figure of the "Krug" plays a prominent part in Siamese mythology, and has previously appeared upon the national postage stamps of 1910, in addition to being included in the scarce overprint device employed in connection with the first experimental air post flight in Siam, between Bangkok and Chandaburi on March 23, 1920.

THE NAVY ESTIMATES AND THE FLEET AIR ARM.

IN the House of Commons on March 19 Mr. Bridgeman, First Lord of the Admiralty, in his statement on the Navy Estimates, said, referring to the Fleet Air Arm, that this service was the same as last year. The relations between the Air Ministry and the Admiralty were that it was for the Admiralty to state their requirements and for the Air Ministry to arrange to supply them. The object of the Air Arm, as an integral part of the Fleet, was to co-operate in any geographical position where there might be a sea fight and to assist in protecting the ships against aircraft and other forms of attack. The personnel consisted of both Naval and Air officers, and the cost, £1,320,000, was almost entirely to be devoted this year to maintenance charges, pay of the personnel, and the provision of material, and only £109,300 was set aside to meet part of the provision for 24 war aircraft to be ready for *Glorious* and *Courageous* when commissioned later on.

COMMANDER BURNEY asked whether the right hon. gentleman would say, in regard to the control of a combined operation, who would be in command? Would it be the Air Ministry and an Air officer, or the Admiralty and a Naval officer?

MR. BRIDGEMAN said he thought the Prime Minister, at question time that afternoon, said the matter was still under consideration as regarded details between the two Services, but as at present arranged he thought he was right in saying, if it was a Naval engagement, a Naval officer would be in command.

COMMANDER BURNEY said that this was a very important point, and asked if he was to understand that, under the present conditions, if we went to war the Government did not know who was going to be in control?

MR. BRIDGEMAN said the hon. gentleman must not understand that. He had said that if it was a Naval action a Naval officer would be in command. He would not at this point be drawn into a discussion of the whole question. Up to now they had proceeded on the lines on which their predecessors went, but that did not preclude them from reconsidering the question.

MR. AMMON was understood to ask whether the Haldane Committee did not say that the Admiralty should have control.

MR. BRIDGEMAN: The Haldane Committee came to certain

definite conclusions, and there were certain points left very obscure. He was most anxious that the relations between the two Services should be as friendly as possible, and he was not going to be goaded into saying anything which might be interpreted as unfriendly to the Air Service, because he believed it was quite possible by friendly arrangement to settle the matter between them. He was quite sure it was not possible to do it if one Department was perpetually being egged on to fight with another Department. He did not commit himself to saying that the present basis was ideal, but he thought they could come to something better, and he would try to do it by a friendly arrangement if possible. The present strength of the Fleet Air Arm was 105 aircraft; the total strength by the end of 1925-26 would be increased by 24. The personnel by the end of 1925-26 should be 241 officers and 1,021 men; 34 officers had been trained and 14 were in training. Eventually, they hoped that 70 per cent. of the pilots and 100 per cent. of the observers would be naval.

ROYAL AERONAUTICAL SOCIETY (Official Notices)

Council Election.—The names of the following 10 members only have been received for the 10 vacancies on the Council, and they will be declared formally elected at the annual general meeting on March 31, at 5 p.m.:

- (1) *T. R. Cave-Browne-Cave; (2) *Sir M. D. Chalmers; (3) *C. R. Fairey; (4) R. H. Mayo; (5) *M. O'Gorman; (6) *The Master of Sempill; (7) T. O. M. Sopwith; (8) C. W. Tinson; (9) H. T. Vane; (10) Sir H. White-Smith.

Wilbur Wright Lecture.—The 13th Wilbur Wright Memorial Lecture will take place in the Library at 7, Albemarle Street, at 8.30 p.m. on Thursday, April 30, when Rear-Admiral D. W. Taylor, of the American National Advisory Committee for Aeronautics, will read a paper on "Some Aspects of the Comparison of Model and Full-Scale Tests."

Secretaryship.—In reply to inquiries the Council desire to state that it is their present intention to make the post of Secretary an honorary one when the present Secretary vacates the appointment on May 1.

W. LOCKWOOD MARSH, Secretary

* Retiring Member of Council.

PUBLICATIONS RECEIVED

U.S. National Advisory Committee Reports: No. 195.—Standardisation Tests of N.A.C.A. No. 1 Wind Tunnel. By E. G. Reid. No. 204.—Forces on Airships in Gusts. By C. P. Burgess. U.S. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1923

Published March 26, 1925

- 29,842. VICKERS, LTD., and F. W. SCARFF. Gun mountings for use on aircraft. (229,751.)
- 30,003. A. H. R. FEDDEN, L. F. G. BUTLER and BRISTOL AEROPLANE CO., LTD. Screw propellers. (229,757.)

APPLIED FOR IN 1924.

Published March 19, 1925

796. L. R. BRIGGS. Air-speed indicators. (229,454.)
- 2,995. FAIREY AVIATION CO., LTD., E. O. TIPS and H. T. W. SMITH. Propellers for aircraft. (229,475.)
- 6,152. SOC. ANON. DITE BLÉRIOT AÉRONAUTIQUE. Two-stroke internal-combustion engines. (213,551.)
- 26,649. H. C. A. POTEZ. Air-cooled internal-combustion engines. (226,172.)

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